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A MARINE HAZARDOUS SUBSTANCES DATA SYSTEM VOLUME 2(U)

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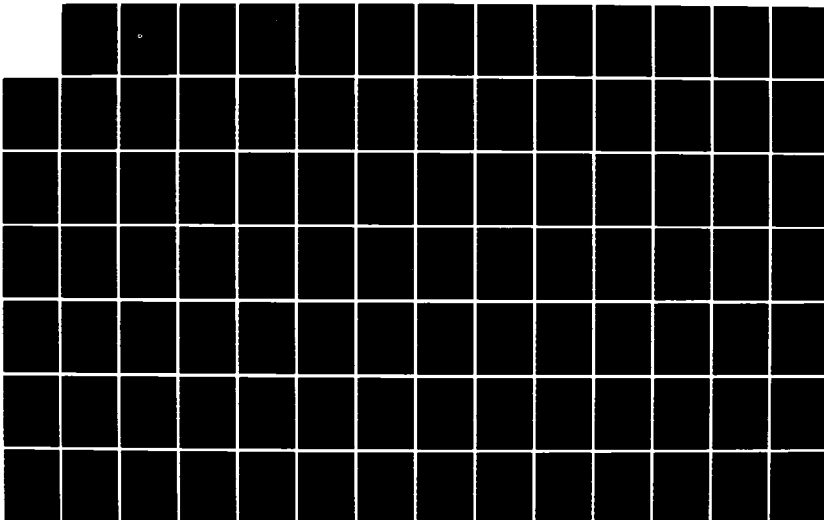
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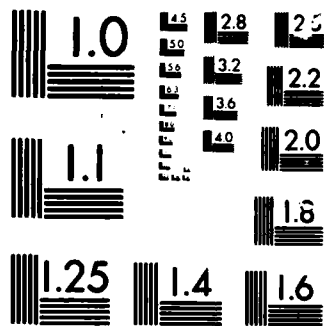
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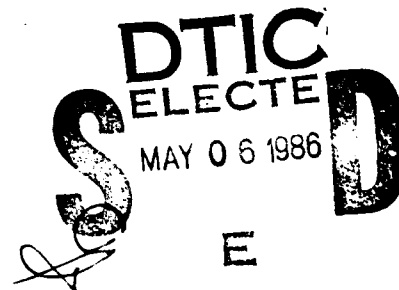
## **A MARINE HAZARDOUS SUBSTANCES DATA SYSTEM**

**VOL. II OF TASK III FINAL REPORT,  
MARINE HAZARDOUS CHEMICAL WORKER**



**R. JOHN PREVOST  
PATRICIA K. BOWLES**

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**U.S. Department of Transportation  
United States Coast Guard**

**Office of Research and Development  
Washington, D.C. 20593**

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By  
R. John Prevost  
Patricia K. Bowles

Volume II of  
Task III FINAL REPORT  
Contract DTCG23-82-C-20027  
SwRI Project 06-7223



Prepared for  
U.S. Coast Guard  
Commandant (G-FCP-22F/64)  
2100 Second Street, S.W.  
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**Approved:**



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**Ulric S. Lindholm, Vice President**  
**Division of Engineering and Materials Sciences**

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16. Abstract <p>This document presents a data system for maintaining and processing data on hazardous substances in the marine environment. It is <del>Volume II</del> of a three-volume report which describes a medical monitoring program for marine personnel who may be potentially exposed to hazardous chemicals during their work. A rationale for ranking marine hazardous substances is described and a comprehensive listing of marine hazardous substances, grouped by hazard priority classification is presented. Twenty-two types of information or characteristic data for the hazardous substances are maintained in the data system and output can be structured to present data for specified subsets of substances and/or subsets of data types. The types of data maintained in the data system include: chemical name, Chemical Hazards Response Information System (CHRIS) Code, time weighted average threshold limit value, short term exposure limit, immediately dangerous to life or health concentration, odor threshold, respiratory hazard index, toxicity priority class code, carcinogenicity reference per ACGIH, NFPA health hazard classification and NAS health hazard rating, Chemical Abstracts Service (CAS) registry number, DOT emergency response guide number, availability of NIOSH/OSHA occupational health guidelines for chemical hazards, availability of biological monitoring methods, and availability of detector tube.</p>			
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## I. INTRODUCTION

This document presents a hazardous substances data system (HSDS) for maintaining and processing data on hazardous substances in the marine environment. It is Volume II of a three-volume report which describes the design of a medical monitoring program for the marine hazardous chemical worker:

Volume I: A Medical Monitoring Program for the Marine Hazardous Chemical Worker [1]

Volume II: A Marine Hazardous Substances Data System

Volume III: Biochemical and Medical Information for Marine Hazardous Substances [2]

The purpose of this volume is to provide a ready reference for threshold limits and other exposure-related information for the hazardous cargo substances regulated under Subchapter D and Subchapter O (CFR 46, Parts 30-40 and 150-154) and for certain non-cargo toxic substances encountered in maintenance and other routine operations aboard tankers and barges.

The order of presentation of materials in this volume is as follows. Chapter II presents a description of the rationale for ranking the marine hazardous substances, a description of the types of data contained in the HSDS, and a comprehensive listing of the marine hazardous substances, grouped by hazard priority classification. A description of the HSDS program is presented in Chapter III. Detailed listings of HSDS data output and a listing of the HSDS program statements are presented in Appendices A and B, respectively.

## II. MARINE HAZARDOUS SUBSTANCES

### II.1 Classification of Hazardous Substances

The marine hazardous substances for which the HSDS has been designed include hazardous cargos regulated under Subchapter D and Subchapter O (CFR 46 Parts 30-40 and 150-154, respectively) and non-cargo toxic substances encountered in maintenance and other routine operations aboard tankers and barges. These substances have been separated into six priority classes:

<u>Priority Class</u>	<u>Description of Class</u>
1	Carcinogen Cargos
2	High Toxic Hazard Cargos (Noncarcinogens)
3	Toxic Hazard Cargos
4	Possible Toxic Hazard Cargos
5	Other Hazardous Cargos
6	Non-cargo Substances with Toxic Hazard

In general, the priority classes decrease in toxic hazard from Priority Class 1 to Priority Class 5. Priority Class 6 contains non-cargo substances, some of which are highly toxic. Relevant information on the health hazard of occupational exposures for Classes 1-3 substances has been documented by the American Conference of Governmental Industrial Hygienists (ACGIH) [3] and this information has been used to classify these cargo substances.

The substances designated Class 1 are bulk liquid cargos which are known or suspected carcinogens as documented by the ACGIH. The Class 1 designation indicates that these substances are considered by the Task III panel [1] to exhibit the greatest potential for occupational health effects and warrant the greatest precautions for avoidance of exposures.

The substances designated Classes 2 and 3 include the remainder of all bulk liquid cargos regulated under Subchapters O and D for which a threshold limit value (TLV) has been assigned by the ACGIH. The differentiation between Classes 2 and 3 is based primarily on the hazard of toxic exposures via respiration. A respiratory hazard index was developed and used to rank the

substances in this regard. This index is defined as the concentration at saturation (CS) in parts per million (ppm) divided by the current ACGIH time weighted average (TWA) threshold limit value in ppm and can be expressed as follows:

$$\text{Respiratory Hazard Index} = \text{CS}(\text{ppm})/\text{TWA}(\text{ppm}).$$

where CS is defined as the concentration of the substance when saturated in air at 20°C and one atmosphere ambient pressure. This concentration is determined from the vapor pressure of the substance at 20°C in mm of mercury divided by the standard pressure of one atmosphere, 760 mm of mercury, and multiplied by  $10^6$  in order to obtain a numerical value in ppm. An upper limit of  $10^6$  ppm was imposed due to the limit of one atmosphere ambient pressure.

The respiratory hazard index was used to evaluate all cargo substances with a current ACGIH TLV-TWA. These substances were ranked with use of the index with the objective of determining which substances should be placed in Priority Class 2, High Toxic Hazard. The desire was to identify approximately 100 of the most hazardous cargo substances and allocate them to Classes 1 and 2. There was an apparent cut point at  $\text{CS}/\text{TWA} = 10,000$ ; a significant number of substances were grouped above 10,000 units and the remainder were significantly below 10,000 units. This apparently natural cut point was used to distinguish between Priority Classes 2 and 3.

All cargo substances with a respiratory hazard index ( $\text{CS}/\text{TWA}$ ) 10,000 or greater have been included in Priority Class 2, High Toxic Hazard. In addition, substances in Classes 3, 4 and 5 have been evaluated individually to determine if a rationale based on parameters other than respiratory hazard should be used to justify inclusion in Class 2. These other parameters are:

- (1) Potential contribution to exposure by skin absorption
- (2) Extreme toxicity without regard to vapor pressure
- (3) NAS/NFPA classification (Described in Section II.2)

For Class 4 substances, information on the health hazard of occupational exposures is not available from ACGIH; relevant data have been obtained from sources other than the ACGIH. Because the ACGIH has been considered by the Task III panel to be the most current and correct source of such information, the health hazard information available for Class 4 substances is considered to be of importance, but not of the same stature as ACGIH data on health hazards associated with occupational exposures.

For Class 5 substances, no data on health hazards associated with occupational exposures have been identified for inclusion in this report. These substances are known to present a safety hazard thus are regulated in commerce under Subchapter O or Subchapter D. They may or may not exhibit an occupational health hazard.

Class 6 substances are not transported as bulk liquid cargos but are encountered in the marine environment in maintenance and other routine operations. The potential for exposures to these substances is generally less than for exposure to cargo substances, and thus they have been classed in the lowest priority classification. However, all substances designated as Class 6 do exhibit a toxic hazard for occupational exposures as documented by ACGIH [3].

## **II.2 Description of HSDS Data**

Some twenty-two types of data are maintained in the HSDS for each hazardous substance. To facilitate the listing of output data, an abbreviation has been devised to label each type of data. Output from the HSDS is structured to present data for a given substance on a line with abbreviated column headings which specify the type of information being listed. A key to the abbreviations used in the HSDS is presented in Table 1. A discussion of each of these twenty-two substance characteristics is presented as follows. Where appropriate, the data source is referenced. The abbreviation used to label the information in the HSDS output, as shown in Table 1, is used as the heading for each discussion.

TABLE 1. KEY TO ABBREVIATIONS

<u>Abbreviation</u>	<u>Description</u>
CHEMICAL NAME	Chemical name of the hazardous substance
CHRIS CODE	Chemical Hazards Response Information System (Code used by U. S. Coast Guard)
CFR	Code of Federal Regulations - primary regulatory citation: O - Subchapter O, 46 CFR Parts 150-154 D - Subchapter D, 46 CFR Parts 30-40
OTHER ROUTE	SKIN - Potential contribution to overall exposure by the cutaneous route
TLV-TWA PPM	Time Weighted Average Threshold Limit Value 8-hour TWA in ppm, unless otherwise noted C - Ceiling value, not 8-hour TWA
STEL PPM	Short Term Exposure Limit in ppm
IDLH PPM	Immediately Dangerous to Life or Health Concentration in ppm
ODOR PPM	Odor Threshold in ppm
CS PPM	Concentration at Saturation (vapor pressure) in ppm
CS/TWA	Respiratory Hazard Index
TOX CODE	Toxicity Priority Class Code
CARC REF	Carcinogenicity Reference per ACGIH
NFPA NAS	NFPA Health Hazard Classification NAS Health Hazard Rating
SEC PROD	Secondary Product
CAS	Chemical Abstracts Service Registry Number
EMRSP GUIDE	DOT Emergency Response Guide Number
BIO MED	Biochemical and Medical Data Sheet
NIOSH GUIDE	NIOSH/OSHA Occupational Health Guidelines for Chemical Hazards
BIO MON	Biological Monitoring
QUAL DT	Qualitative Detector Tube
QUAN DT	Quantitative Detector Tube
TLV DT	Threshold Limit Value Detector Tube

### CHEMICAL NAME

The chemical name of the hazardous substance is the primary descriptor for hazardous substances in the HSDS. In some cases, an appropriate synonym or other explanatory information is also included with the primary chemical name. The primary chemical names were obtained from a listing [4] of all chemicals regulated in the CFR which was provided by the U. S. Coast Guard Hazardous Materials Branch (G-MTH-1), Washington, D.C.

### CHRIS CODE

This is three letter code used for the U. S. Coast Guard Chemical Hazards Response Information System (CHRIS). The code was obtained from the Chemical Data Guide for Bulk Shipment by Water [5].

### CFR

The designation O for Subchapter O (46 CFR Parts 150-154) or D for Subchapter D (46 CFR Parts 30-40) is provided as obtained from the listing referenced CHEMICAL NAME [4].

### OTHER ROUTE

The designation SKIN is indicated for substances which exhibit a potential contribution to overall exposure by the cutaneous route. For Priority Class 1-3 substances, this information was obtained from the ACGIH publication of threshold limit values for 1983-84 [3].

### TLV-TWA PPM

The time weighted average threshold limit value is presented in ppm unless otherwise noted. For certain substances, the units of milligrams per cubic meter (MG/M3) are specified. For Priority Classes 1, 2, 3, and 6, this information was obtained from the ACGIH publication of threshold limit values [3]. The presence of a note in parentheses immediately after the TLV-TWA indicates that the value of the TLV is associated with a specific isomer



of the substance or with a secondary product given off by the substance. If the association is with a secondary product, the TOX CODE (see next page) is followed by an asterisk (\*).

For Class 4 substances, TLV data are unavailable from the ACGIH. The TLV-TWA data for Class 4 substances have been determined from sources other than ACGIH and these are specified with TOX CODE designation (see next page).

As discussed previously (Section II.1), for substances included in Priority Class 5, no data on occupational health has been identified for inclusion in this report. No ACGIH TWA-TLV data are available nor have any comparable data been found from other sources.

#### STEL PPM

The short term exposure limit is presented in ppm unless otherwise specified. For Priority Classes 1-3 substances, this information was obtained from Reference 3.

#### IDLH PPM

The IDLH concentration in ppm was obtained from two sources: The Chemical Data Guide for Bulk Shipment by Water [4] and the NIOSH/OSHA Pocket Guide to Chemical Hazards [6].

#### ODOR PPM

The odor threshold in ppm was obtained from four separate sources [5, 7, 8, 9]. Discrepancies among the various sources were resolved by the industrial hygienist on the Task III panel [1].

#### CS PPM

The concentration at saturation is provided in ppm for one atmosphere of pressure at 20°C. An upper limit of one million ppm was applied

because of the specification of normal working conditions of one atmosphere of pressure. (See Section II.1 for discussion of CS calculation.)

### CS/TWA

The respiratory hazard index, CS/TWA is a unitless number calculated by dividing the concentration at saturation (CS) by the TWA-TLV.

### TOX CODE (Toxicity Code)

This code is the Priority Class designation which decreases in toxic hazard from Priority Class 1 to Priority Class 6, as discussed in Section II.1. In addition to the numerical code, other symbols sometimes appear immediately after the numerical code. An asterisk (\*) indicates that the TLV-TWA data (and thus the TOX CODE classification) is associated with a secondary product. A letter symbol following the numerical code indicates a source of TLV-TWA data other than ACGIH, as discussed previously for Column 5 (TLV-TWA PPM). This only occurs for Class 4 substances. The following references have been identified and coded as sources of TLV-TWA data for Class 4 substances:

<u>Code</u>	<u>Reference</u>
C	Chemical Data Guide for Bulk Shipment By Water [5]
H	Personal Communication with Prof. J. W. Hammond, C.I.H. [10]
L	Letter from U.S.C.G. Cargo and Hazards Branch [11]
N	NIOSH Registry of Toxic Effects of Chemical Substances [12]
P	NIOSH/OSHA Pocket Guide to Chemical Hazards [6]
U	Undocumented Source

### CARC REF (Carcinogen Reference)

This is the reference to carcinogenic potential as determined from the 1983-84 publication of threshold limit values [3]. In that reference, substances are classified by ACGIH: as a recognized human carcinogen (A1) or an industrial substance suspected of carcinogenic potential (A2). These classifications, A1 or A2, are used as the coding in the HSDS.

## NFPA/NAS

The data field for this information is coded in four digits. The first digit is the National Fire Prevention Association (NFPA) health hazard classification [13] described as follows:

### NFPA Health Hazard Classification

### Definition

4	Materials which on very short exposure could cause death or major residual injury even though prompt medical treatment were given.
3	Materials which on short exposure could cause serious temporary or residual injury even though prompt medical treatment were given.
2	Materials which on intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical treatment is given.
1	Materials which on exposure would cause irritation but only minor residual injury even if no treatment is given.
0	Materials which on exposure under fire conditions would offer no hazard beyond that of ordinary combustible material.

The second through fourth digits are the National Academy of Sciences (NAS) vapor irritant, liquid or solid irritant, and poison health hazard ratings [14], respectively, which are described as follows:

### NAS Hazard Rating

### Vapor Irritant

### Liquid or Solid Irritant

### Poisons

0	No effect	No effect	No effect
1	Slight Effect	Causes skin smarting	Slightly toxic
2	Moderate irritation; temporary effect	First-degree burns, short exposure	Intermediate toxicity
3	Irritating; cannot be tolerated	Second-degree burns, few minutes' exposure	Moderately toxic
4	Severe effect; may do permanent injury	Second-degree and third-degree burns	Severely toxic

### SEC PROD (Secondary Product)

Any toxic secondary product such as H<sub>2</sub>S or HCL which is emitted by the primary hazardous substance is indicated in the HSDS.

### CAS

The Chemical Abstracts Service registry number was obtained from the Registry of Toxic Effects of Chemical Substances [12]. This number is a useful identifier for making certain that the exact chemical substance is being described in a given reference.

### EMRSP GUIDE

The emergency response guide number was obtained from the 1984 Emergency Response Guidebook published by the U. S. Department of Transportation [15]. The emergency response guide number provides an immediate reference which describes potential hazards and recommended emergency action procedures.

### BIO MED (Biochemical and Medical)

The inclusion of a Biochemical and Medical Data Sheet for the substance in Volume III of the Task III report [2] is indicated in the HSDS.

### NIOSH GUIDE

If occupational health guidelines can be found in the Occupational Health Guidelines for Chemical Hazards published by the National Institute for Occupational Safety and Health [16], this fact is indicated in the HSDS data bank.

### BIO MON (Biological Monitoring)

The availability of a biological monitoring method published in Volume I, Appendix C of the Task III report [1] is indicated in the HSDS by a

letter coding which indicates the specific noninvasive sampling medium or media: B for breath and/or U for urine.

#### QUAL DT (Qualitative Detector Tube)\*

The availability of a detector tube to qualitatively detect the specific hazardous substance is indicated in the HSDS by the presence of letter coding which indicates the manufacturer: D for National Draeger and/or G for Gastec (Sensidyne).

#### QUAN DT (Quantitative Detector Tube)\*

The availability of a detector tube to quantitatively measure the specific hazardous substance is indicated in the HSDS by the same coding as used above for QUAN DT: D for National Draeger and/or G for Gastec (Sensidyne).

#### TLV DT (TLV Detector Tube)\*

The availability of a detector tube to quantitatively measure the specific hazardous substance at or below the TLV concentration is indicated in the HSDS by the same coding used above for QUAL DT and QUAN DT: D for National Draeger and/or G for Gastec (Sensidyne).

### II.3 Presentation of the Hazardous Substances

The marine hazardous substances in each of the six priority classes are presented in this section. Data for a total of 699 marine hazardous substances are currently maintained in the HSDS. The number of substances in each priority classification is:

---

\*The indication of detector tube brand names in QUAL DT, QUAN DT, and TLV DT does not reflect any endorsement of specific products but are only used as examples of detector tubes available.

<u>Class</u>	<u>Number</u>
1	18
2	56
3	163
4	74
5	364
6	24

Of the total 699 substances, information on the health hazard of occupational exposures is presented for 335 substances in Classes 1, 2, 3, 4, and 6. For the 364 substances in Class 5, no data on health hazards associated with occupational exposures have been identified for inclusion in this report.

The rationale for classification discussed in Section II.1 was used to separate the substances into these six priority classes. As specified in the rationale, Class 1 substances are known or suspected carcinogens. Class 2 substances are high toxic hazard cargos which are not carcinogens. Together, the 74 cargo substances listed in Classes 1 and 2 are considered to be the most worrisome regarding occupational exposures. For medical monitoring purposes, personnel are classified as high risk [1] due to high potential for exposure to Class 1 or Class 2 chemical substances. This requires two conditions to be met: 1) High potential for exposure in routine job assignment, and 2) known or suspected involvement with Class 1 or Class 2 chemical substances.

As discussed in Section II.1, the primary rationale for placement of a substance in Class 2 is high respiratory hazard. A respiratory hazard index which accounts for vapor pressure and inherent toxicity was used as an indicator of those substances with high respiratory hazard. However, other parameters were also considered for justification of inclusion of a substance in Class 2 even when the respiratory hazard index did not justify inclusion. The potential for absorption through skin and extreme toxicity without regard to vapor pressure are two parameters which were considered for the remainder of the list of hazardous substances not designated as Class 1 or Class 2 by the primary rationale. Accordingly, a number of substances were transferred

from other classes to Class 2 and these are presented in Table 2 with a brief statement of the specific justification for their inclusion in Class 2.

Certain of the Priority Class 3 substances have been designated by the Coast Guard Hazardous Materials Branch [17] as more important than the remaining Class 3 substances for the purposes of health surveillance. This designation has been indicated in the HSDS by the symbol "#" with the TOX CODE. A total of 41 substances have thusly been designated as Priority Class 3#.

The marine hazardous substances in each of the six priority classes are presented in Tables 3-8 for Priority Classes 1-6, respectively. A limited amount of data are also presented with the chemical name for each hazardous substance to help identify the substance and its inherent toxicity. In these tables, data are presented in alphabetical order of the chemical name for the following headings:

- (1) CHEMICAL NAME
- (2) CHRIS CODE
- (3) CFR
- (4) OTHER ROUTE
- (5) TLV-TWA
- (6) SEQ NO

This last heading, SEQ NO, is the sequence number of the line of information in the master listing of data which is presented in Appendix A. For a given substance, this sequence number provides an easy cross-reference to the data presented for that substance in the master listing.

Complete listings of data for all twenty-two columns of data for Class 1 and for Class 2 substances and a master listing of the complete set of data for the hazardous substances covered by HSDS are presented in Appendix A. The data in the Appendix A master listing are presented in alphabetical order by chemical name. The final column of data in the master list, labeled SEQ NO, is the sequence number of the line of data in the master list. This sequence number provides an easy cross-reference to the data for that substance presented in other parts of this report.

TABLE 2. JUSTIFICATION FOR INCLUSION OF  
ADDITIONAL SUBSTANCES IN PRIORITY CLASS 2

<u>Chemical Name</u>	<u>Justification</u>
Acetone cyanohydrin	Skin absorption, extreme toxicity
Aniline	Skin absorption
Chlorosulfonic acid	Extreme toxicity, toxic secondary product
2,2'-Dichloroethyl ether	Skin absorption, extreme toxicity
1,4-Dioxane	Skin absorption
Diphenylmethane diisocyanate	Extreme toxicity, high NAS hazard rating
Epichlorohydrin	Skin absorption
Hydrochloric acid	High toxicity, high NFPA and NAS hazard ratings
Hydrofluoric acid	High toxicity, high NFPA and NAS hazard ratings
Nitrobenzene	Skin absorption, high NAS hazard rating
Motor fuel antiknock compounds	Skin absorption, extreme toxicity
Phenol	Skin absorption
Phosphorus, white	High toxicity, high NAS hazard rating
Styrene	Suspect carcinogen*
Toluene 2,4-Diisocyanate	Skin absorption, extreme toxicity
Trichloroethylene	Suspect carcinogen*

\*Not recognized by ACGIH.



TABLE 3. CLASS 1 SUBSTANCES-CARCINOGEN CARGOS

20-DEC-85

CHEMICAL NAME

CHRIS CFR OTHER  
CODE ROUTETLV-TWA  
PPMSEQ  
NO.

ACRYLONITRILE	ACN	0	SKIN	2	011
BENZENE	BNZ	0		10	040
BENZENE HYDROCARBON MIX (> OR = 10% BEN)	BHB	0		10	041
BENZENE HYDROCARBON MIX (WITH ACETYLENE)	BHA	0		10	042
BENZENE, TOLUENE, XYLENE MIXTURE	BTX	0		10	044
BUTADIENE (1,3 BUTADIENE)	BDI	0		10	050
BUTADIENE, BUTYLENE MIX WITH ACETYLENES	BBM	0		10	051
CARBON TETRACHLORIDE	CBT	0	SKIN	5	093
CHLOROFORM	CRF	0		10	103
ETHYLENE DIBROMIDE	EDB	0	SKIN		257
ETHYLENE OXIDE	EOX	0		1	269
ETHYLENE OXIDE, PROPYLENE OXIDE MIXTURE	EPM	0		1	270
FORMALDEHYDE SOLUTION	FMS	0		1	287
NITROPROPANE (1-, 2-, AND MIXTURES)	NPM	0		10 (2-)	429
2-NITROPROPANE	NPP	0		10	430
NITROPROPANE (60%), NITROETHANE (40%)	NNM	0		10 (2-)	431
O-TOLUIDINE	TLI	0	SKIN	2	635
VINYL CHLORIDE	VCM	0		5	679

TOTAL OF 18 ITEM(S) IN TABLE

TABLE 4. CLASS 2 SUBSTANCES-HIGH TOXIC HAZARD CARGOS

20-DEC-85

CHEMICAL NAME

CHRIS  
CODE

CFR

OTHER  
ROUTETLV-TWA  
PPMSEQ  
NO.

ACETONE CYANOHYDRIN	ACY	0	SKIN	0.25	005
ALLYL ALCOHOL	ALA	0	SKIN	2	019
ALLYL CHLORIDE	ALC	0		1	020
AMMONIA, ANHYDROUS	AMA	0		25	024
ANILINE	ANL	0	SKIN	2	031
BENZYL CHLORIDE	BCL	0		1	046
BUTYLAMINE (ALL ISOMERS)	BTY	0	SKIN	C5	061
N-BUTYLAMINE	BAM	0	SKIN	C5	062
SEC-BUTYLAMINE	BTL	0	SKIN	C5	063
TERT-BUTYLAMINE	BUA	0	SKIN	C5	064
CARBON DISULFIDE	CBB	0	SKIN	10	091
CHLORINE	CLX	0		1	100
CHLOROSULFONIC ACID	CSA	0		1	109
CROTONALDEHYDE	CTA	0		2	122
2,2'-DICHLOROETHYL ETHER	DEE	0	SKIN	5	148
DICHLOROMONOFUOROMETHANE	DFM	0		10	151
1,3-DICHLOROPROPENE	DPU	0	SKIN	1	156
DICHLOROPROPENE (1,1- 1,2- 1,3- AND MIX)	DPS	0	SKIN	1	157
DICHLOROPROPENE, DICHLOROPROPANE MIXTURE)	DMX	0	SKIN	1	158
DIISOPROPYLAMINE	DIA	0	SKIN	5	191
DIMETHYLAMINE	DMA	0		10	194
DIMETHYLAMINE SOLUTION (45% OR LESS)	DMG	0		10	195
DIMETHYLAMINE SOLUTION (>45% AND <=55%)	DMY	0		10	196
DIMETHYLAMINE SOLUTION (55% AND <65%)	DMC	0		10	197
1,4-DIOXANE	DOX	0	SKIN	25	207
DIPHENYLMETHANE DIISOCYANATE	DPM	0		CO. 02	212
EPICHLOROHYDRIN	EPC	0	SKIN	2	228
ETHYLAMINE	EAM	0		10	242
ETHYLAMINE (40% OR LESS)	EAO	0		10	243
ETHYLAMINE (72% OR LESS)	EAN	0		10	244
ETHYLENE DICHLORIDE	EDC	0		10	258
GLUTARALDEHYDE (50% OR LESS)	GTA	0		CO. 2	300
HYDROCHLORIC ACID	HCL	0		C5	326
HYDROFLUORIC ACID	HFA	0		3	328
HYDROGEN CHLORIDE	HDC	0		C5	329
HYDROGEN FLUORIDE	HFX	0		3	330
ISOPROPYLAMINE	IPP	0		5	349
ISOPROPYLAMINE (90% OR LESS)	IPO	0		5	350
METHYLAMINE SOLUTION (42% OR LESS)	MSZ	0		10	380
METHYL BROMIDE	MTB	0	SKIN	5	383
METHYL CHLORIDE	MTC	0		50	386
MOTOR FUEL ANTIKNOCK CMPDS (PB ALKYLs)	MFA	0	SKIN	0.10 MG/M3	409
NITRIC ACID	NAC	0		2	422
NITRIC ACID (70% OR LESS)	NCD	0		2	423
NITROBENZENE	NTB	0	SKIN	1	424
PHENOL	PHN	0	SKIN	5	557
PHOSPHORUS, WHITE	PPW	0		0.1 MG/M3	560
PROPYLENE OXIDE	POX	0		20	591
STYRENE	STY	0		50	612
SULFUR DIOXIDE	SFD	0		2	615
1,1,2,2-TETRACHLOROETHANE	TEC	0	SKIN	1	621

TABLE 4. CLASS 2 SUBSTANCES-HIGH TOXIC HAZARD CARGOS (CONT'D)

20-DEC-85

CHEMICAL NAME

CHRIS CFR OTHER  
CODE ROUTETLV-TWA  
PPMSEG  
NO.

TOLUENE 2,4-DIISOCYANATE

TDI 0

.005

633

TOLUENE DIISOCYANATE, DIPHENYLMET DIISOC

TDD 0

.005

634

TRICHLOROETHYLENE

TCL 0

50

639

VINYL ACETATE

VAM 0

10

677

VINYLIDENECHLORIDE

VCI 0

5

681

TOTAL OF 56 ITEM(S) IN TABLE

TABLE 5. CLASS 3 SUBSTANCES-TOXIC HAZARD CARGOS

20-DEC-85

CHEMICAL NAME

CHRIS CFR OTHER  
CODE ROUTETLV-TWA  
PPMSEQ  
NO.

ACETALDEHYDE	AAD	O		100	001
ACETIC ACID	AAC	O		10	002
ACETIC ANHYDRIDE	ACA	O		C5	003
ACETONE	ACT	D		750	004
ACETONITRILE	ATN	O	SKIN	40	006
ACRYLAMIDE (50% OR LESS)	AAM	O	SKIN	0.3 MG/M3	009
ACRYLIC ACID	ACR	O		10	010
N-AMYL ACETATE	AML	D		100	026
ASPHALT	ASP	D		5 MG/M3	036
ASPHALT BLENDING STOCKS: ROOFERS FLUX	ARF	D		5 MG/M3	037
ASPHALT BLENDING STOCKS: STRAIGHT RUN RE	ASR	D		5 MG/M3	038
BUTANE	BUT	O		800	052
N-BUTYL ACETATE	BCN	D		150	053
SEC-BUTYL ACETATE	BTA	D		200	054
ISO-BUTYL ACRYLATE	BAI	O		10	055
BUTYL ACRYLATE (INH) (ISO, N, AND MIXES)	BAR	O		10	056
N-BUTYL ACRYLATE	BTC	O		10	057
N-BUTYL ALCOHOL	BAN	D	SKIN	C50	058
SEC-BUTYL ALCOHOL	BAS	D		100	059
TERT-BUTYL ALCOHOL	BAT	D		100	060
BUTYL TOLUENE (P-TERT)		D		10 (P-T)	076
CAMPHOR (OIL)	CPO	O		2	087
CAPROLACTAM (SOLUTION)	CLS	D		5	088
CARBON BLACK BASE		D		3.5 MG/M3	090
CAUSTIC POTASH SOLUTION	CPS	O	SKIN	C2 MG/M3	094
CAUSTIC SODA SOLUTION	CSS	O	SKIN	C2 MG/M3	095
CHLOROBENZENE	CRB	O		75	102
CHLOROTOLUENE (O, M, P, AND MIXTURES)	CHI	O	SKIN (O-)	50 (O-)	110
O-CHLOROTOLUENE	CTO	O	SKIN	50	112
M-CRESOL	CRL	O	SKIN	5	117
O-CRESOL	CSL	O	SKIN	5	118
P-CRESOL	CSO	O	SKIN	5	119
CRESOLS	CRS	O	SKIN	5	120
CUMENE	CUM	D	SKIN	50	123
CYCLOHEXANE	CHX	D		300	124
CYCLOHEXANOL	CHN	D		50	125
CYCLOHEXANONE	CCH	O		25	126
CYCLOHEXYLAMINE	CHA	O	SKIN	10	127
CYCLOPENTADIENE POLYMERS		D		75	128
DIACETONE ALCOHOL	DAA	D		50	138
DIBUTYL PHTHALATE	DPA	D		5 MG/M3	142
O-DICHLOROBENZENE	DBO	O		C50	144
P-DICHLOROBENZENE	DBP	O		75	145
DICHLORODIFLUOROMETHANE	DCF	O		1000	146
1,1-DICHLOROETHANE	DCH	O		200	147
DICHLOROMETHANE (METHYLENE CHLORIDE)	DCM	O		100	150
1,2-DICHLOROPROPANE	DPP	O		75	154
2,2-DICHLOROPROPIONIC ACID	DCN	O		1	159
DICHLOROTETRAFLUOROETHANE	DTE	O		1000	160
DICYCLOPENTADIENE	DPT	D		5	161
DIETHANOLAMINE	DEA	O		3	162

TABLE 5. CLASS 3 SUBSTANCES-TOXIC HAZARD CARGOS (CONT'D)

20-DEC-85

CHEMICAL NAME	CHRIS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	SEQ NO.
DIETHYLAMINE	DEN	O		10	163
DIETHYLENETRIAMINE	DET	O	SKIN	1	174
DIETHYL PHTHALATE	DPH	D		5 MG/M3	178
DIISOBUTYL KETONE	DIK	D		25	185
DIMETHYLACETAMIDE	DAC	O	SKIN	10	193
DIMETHYLFORMAMIDE	DMF	O	SKIN	10	201
DIMETHYL PHTHALATE	DTL	D		5 MG/M3	202
DIPHENYL	DIL	D		0.2	209
DIPROPYLENE GLYCOL MONOMETHYL ETHER		D		100	215
ETHANE	ETH	O			230
2-ETHOXYETHANOL	EGE	D	SKIN	5	231
2-ETHOXYETHYL ACETATE		D	SKIN	5	232
ETHYL ACETATE	ETA	D		400	239
ETHYL ACRYLATE	EAC	O	SKIN	5	240
ETHYL ALCOHOL	EAL	D		1000	241
ETHYL AMYL KETONE		D		25	245
ETHYLBENZENE	ETB	D		100	246
ETHYL CHLORIDE	ECL	O		1000	249
ETHYLENE	ETL	O			252
ETHYLENE CHLOROHYDRIN	ECH	O	SKIN	C1	254
ETHYLENEDIAMINE	EDA	O		10	256
ETHYLENE GLYCOL	EGL	D		C50	259
ETHYLENE GLYCOL MONOBUTYL ETHER	EQM	D	SKIN	25	262
ETHYLENE GLYCOL MONOETHYL ETHER ACETATE	EGA	D	SKIN	5	264
ETHYLENE GLYCOL MONOMETHYL ETHER	EME	D	SKIN	5	266
ETHYLENE GLYCOL MONOMETHYL ETHER ACETATE		D		5	267
ETHYL ETHER	EET	O		400	272
ETHYLIDENE NORBORNENE	ENB	O		C5	280
FORMAMIDE	FAM	D		20	288
FORMIC ACID	FMA	O		5	289
FURFURAL	FFA	O	SKIN	2	290
FURFURYL ALCOHOL	FAL	D	SKIN	10	291
GASOLINE: AUTOMOTIVE (4.23G PB/GAL)	GAT	D		300	293
GASOLINE: AVIATION (4.86G PB/GAL)	GAV	D		300	294
GASOLINE BLENDING STOCKS: ALKYLATES	GAK	D		300	295
GASOLINE BLENDING STOCKS: REFORMATES	GRF	D		300	296
GASOLINE: CASINGHEAD	GCS	D		300	297
GASOLINE: POLYMER	GPL	D		300	298
GASOLINE: STRAIGHT RUN	GSR	D		300	299
HEPTANE	HPT	D		400	310
HEXANE	HXA	D		50	320
HEXYLENE GLYCOL	HXG	D		C25	324
HYDROCHLORIC ACID, SPENT (15% OR LESS)	HCS	O		C5	327
INDUSTRIAL WASTES (METHYL MERCAPTAN, ETC)	INW	O		0.5 (M-M)	333
ISOAMYL ACETATE	IAT	D		100	334
ISOBUTYL ACETATE	IBA	D		150	335
ISOBUTYL ALCOHOL	IAL	D		50	336
ISOPHORONE	IPH	D		C5	343
ISOPHORONE DIISOCYANATE	IPD	O	SKIN	C0.01	345
ISOPROPYL ACETATE	IAC	D		250	347
ISOPROPYL ALCOHOL	IPA	D		400	348

TABLE 5. CLASS 3 SUBSTANCES-TOXIC HAZARD CARGOS (CONT'D)

20-DEC-85 CHEMICAL NAME	CHRIS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	SEQ NO.
ISOPROPYL ETHER	IPE	0		250	351
MALEIC ANHYDRIDE	MLA	0		0.25	366
MESITYL OXIDE	MSO	0		15	371
METHACRYLIC ACID	MAD	0		20	372
METHANE	MTH	0			373
METHYL ACETATE	MTT	D		200	375
METHYL ACETYLENE, PROPADIENE MIXTURE	MAP	0		1000	377
METHYLACRYLATE	MAM	0	SKIN	10	378
METHYL ALCOHOL	MAL	D	SKIN	200	379
METHYL AMYL ALCOHOL (METHYLISOBUTYL CARB.	MAA	D	SKIN	25	382
METHYL BUTANOL (ISOAMYL ALCOHOL)		D		100	384
METHYL ETHYL KETONE (2-BUTANONE)	MEK	D		200	388
METHYL FORMATE	MFM	0		100	391
METHYL ISOBUTYL CARBINOL	MIC	D	SKIN	25	394
METHYL ISOBUTYL KETONE (HEXONE)	MIK	D		50	395
METHYL METHACRYLATE	MMM	0		100	396
ALPHA-METHYLSTYRENE	MSR	0		50	401
MONOETHANOLAMINE (ETHANOLAMINE)	MEA	0		3	406
MORPHOLINE	MPL	0	SKIN	20	408
NAPHTHALENE	NTM	0		10	414
NAPHTHA: STODDARD SOLVENT	NSS	D		100	418
1-NITROPROPANE	NPN	0		25	428
O-NITROTOLUENE	NIE	0	SKIN	2	432
NITROTOLUENE (O, P, AND MIXTURES)	NIT	0	SKIN	2	433
P-NITROTOLUENE	NTT	0		2	434
NONANE	NAN	D		200	435
OCTANE	OAN	D		300	446
OIL: CRUDE (SOUR)	OIL	D		10 (H2S)	454
OLEUM	OLM	0		1 MG/M3	543
N-PENTANE	PTA	D		600	553
PERCHLOROETHYLENE (TETRACHLOROETHYLENE)	PER	0		50	555
PHOSPHORIC ACID	PAC	0		1 MG/M3	558
PHTHALIC ANHYDRIDE	PAN	0		1	562
PROPANE	PRP	0			577
PROPIONIC ACID	PNA	0		10	580
N-PROPYL ACETATE	PAT	D		200	583
N-PROPYL ALCOHOL	PAL	D	SKIN	200	584
PROPYLENE	PPL	0		1000	587
PYRIDINE	PRD	0		5	596
SILICON TETRACHLORIDE	STC	0		C5 (HCL)	600
SODIUM DICHROMATE SOLUTION (<=69%)(CRVI)	SDL	0		0.05 MG/M3	605
SODIUM HYDROSULFIDE SOLUTION (<=45%)	SHR	0		10 (H2S)	606
SULFURIC ACID	SFA	0		1 MG/M3	616
SULFURIC ACID, SPENT	SAC	0		1 MG/M3	617
TETRAHYDROFURAN	THF	0		200	627
TOLUENE	TOL	D	SKIN	100	631
1,2,4-TRICHLOROBENZENE	TCB	0		C5	637
1,1,2-TRICHLOROETHANE	TCM	0	SKIN	10	638
1,2,3-TRICHLOROPROPANE	TCN	0		50	640
TRIETHYLAMINE	TEN	0		10	649
TRIMETHYL BENZENE		D		25	660

TABLE 5. CLASS 3 SUBSTANCES-TOXIC HAZARD CARGOS (CONT'D)

20-DEC-85

CHEMICAL NAME	CHRIS CODE	CFR OTHER ROUTE	TLV-TWA PPM	SEQ NO.
TRIMETHYL PHOSPHITE	TPP	O	2	664
TURPENTINE	TPT	D	100	669
UREA, AMMONIUM NITRATE SOLN (> 2% NH3)	UAS	O	25 (NH3)	674
N-VALERALDEHYDE	VAL	O	50	675
VINYLTOLUENE	VNT	O	50	683
WAX: PARAFFIN	WPF	D	2 MG/M3	686
M-XYLENE	XLM	D	100	693
O-XYLENE	XLO	D	100	694
P-XYLENE	XLP	D	100	695
ZINC DIALKYLDITHIOPHOSPHATE	ZDP	D	10 (H2S)	699

TOTAL OF 163 ITEM(S) IN TABLE

TABLE 6. CLASS 4 SUBSTANCES-POSSIBLE TOXIC HAZARD CARGOS

20-DEC-85

CHEMICAL NAME	CHRIS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	SEQ NO.
ACETOPHENONE	ACP	D		1	007
ADIPONITRILE	ADN	O		50	012
ALKYLBENZENESULFONIC ACIDS	ABS	O		1 MG/M3	016
AMMONIUM HYDROXIDE, 28 PERCENT AQ.	AMH	O		200	025
N-AMYL ALCOHOL	AAN	D		100	027
N-AMYL METHYL KETONE	AMK	D		50	029
1,2-BUTYLENE OXIDE	BTO	O		400	068
BUTYL METHYL KETONE		D		5	074
CAMPHOR	CPO	O		2	086
CARBOLIC OIL (PHENOL)	CBO	O		5	089
CHEMICAL WASTES (CHLOR HCARBONS & CAUST)	CWC	O	SKIN	10	099
CHLOROHYDRINS (CRUDE)	CHD	O		5	104
CHLOROPRENE	CRP	O	SKIN	25	105
2-CHLOROPROPIONIC ACID	CLA	O		2	106
2- AND 3-CHLOROPROPIONIC ACID MIXTURE	CPM	O		2 (2-)	108
P-CHLOROTOLUENE	CRN	O		50	113
CRESYLATE SPENT CAUSTIC	CSC	O		5	121
DIETHYLENE GLYCOL	DEG	D		100	165
DIETHYLENEGLYCOL MONOETHYL ETHER	DGE	D		5	169
DIETHYLENE GLYCOL MONOETHYL ETHER ACETAT		D		5	170
DIETHYLENEGLYCOL MONOMETHYL ETHER	DGM	D		5	171
DIETHYLENE GLYCOL MONOMETHYL ETHER ACET		D		5	172
DIETHYLETHANOLAMINE	DAE	O		10	175
DI(ETHYLHEXYL)PHTHALATE		D		5 MG/M3	177
DIOCTYL PHTHALATE	DOP	D		5 MG/M3	206
DIPHENYL DIPHENYL OXIDE	DDO	D		0.5	210
DIPHENYL ETHER	DPE	D		1	211
ETHYL BUTANOL	EBT	D		100	247
N-ETHYL CYCLOHEXYLAMINE	ECC	O		370 MG/M3	251
ETHYLENE GLYCOL MONOISOPROPYL ETHER		D		25	265
FERRIC CHLORIDE SOLUTIONS	FCS	O		1 MG/M3	285
GLYCERINE	GCR	D		10 MG/M3	301
HEXYL ACETATE		D		50	323
ISOPRENE	IPR	O		1000	346
JET FUEL: JP-1 (KEROSENE)	JPO	D		100 MG/M3	353
KEROSENE	KRS	D		100 MG/M3	357
METHYL AMYL ACETATE	MAC	D		50	381
2-METHYL-6-ETHYL ANILINE	MEN	O	SKIN	260	387
METHYL HEPTYL KETONE (ETHYL AMYL HEPTANO	MHK	D		25	392
MINERAL SPIRITS	MNS	D		100	402
MONOCHLORODIFLUOROMETHANE	MCF	O		1000	403
NAPHTHA: AROMATIC (10% OR LESS BENZENE)		D		100	410
NAPHTHA: COAL TAR	NCT	O		300	411
NAPHTHA: CRACKING FRACTION		D		100	412
NAPHTHA: HEAVY		D		100	413
NAPHTHA: PARAFFINIC		D		100	415
NAPHTHA: PETROLEUM		D		100	416
NAPHTHA: SOLVENT	NSV	D		100	417
NAPHTHA: VM & P (75% NAPHTHA)	NVM	D		300	419
OCTYL PHTHALATE		D		5 MG/M3	452
OIL, FUEL: NO. 1 (KEROSENE)	ONN	D		100 MG/M3	491



TABLE 6. CLASS 4 SUBSTANCES-POSSIBLE TOXIC HAZARD CARGOS (CONT'D)

20-DEC-85

CHEMICAL NAME	CHRIS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	SEQ NO.
OIL, FUEL: NO. 1-D	OOD	D		100 MG/M3	492
OIL, MISC: ALIPHATIC		D		5 MG/M3	499
OIL, MISC: AROMATIC (5% OR LESS BENZENE)		D		5 MG/M3	501
OIL, MISC: AVIATION F2300		D		5 MG/M3	502
OIL, MISC: COAL		D		5 MG/M3	504
OIL, MISC: HEARTCUT DISTILLATE		D		5 MG/M3	509
OIL, MISC: LUBRICATING	OLB	D		5 MG/M3	512
OIL, MISC: MINERAL	OMN	D		5 MG/M3	513
OIL, MISC: MOTOR	OMT	D		5 MG/M3	515
OIL, MISC: WHITE (MINERAL)		D		5 MG/M3	540
PARALDEHYDE	PDH	O		1.5 MG/M3	548
POLYMETHYLENE POLYPHENYL ISOCYANATE	PPI	O		0.01	571
PROPIONALDEHYDE	PAD	O		4000	579
PROIONITRILE	PCN	O	SKIN	6	582
N-PROPYLAMINE	PRA	O			585
PROPYLENE GLYCOL METHYL ETHER	PME	D		100	590
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)		D		25	595
SODIUM BOROHYDRIDE (<=15%), NAOH/SOLUT	SBX	O		2 MG/M3	603
TRICRESYL PHOSPHATE (<1% O-ISOMER)	TCP	D		0.1 MG/M3	641
TRICRESYL PHOSPHATE (>1% ORTHO)	TCO	O		0.1 MG/M3	642
TURPENTINE SUBSTITUTE (WHITE SPIRIT)		D		350 MG/M3	670
WHITE SPIRIT		D		500	689
WHITE SPIRIT, LOW AROMATIC		D		500	690

TOTAL OF 74 ITEM(S) IN TABLE

TABLE 7. CLASS 5 SUBSTANCES-OTHER HAZARDOUS CARGOS

20-DEC-85

CHEMICAL NAME	CHRIS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	SEQ NO.
ACETYL TRIBUTYL CITRATE		D			008
ALCOHOLS (MIXED)		D			013
ALKENYL SUCCINIC ACID		D			014
ALKENYLSUCCINIC ANHYDRIDE		D			015
N-ALKYL PHTHALATES		D			017
ALKYL SUCCINNATE FORMALDEHYDE HYDROXY AM		D			018
2-(2-AMINOETHOXY)ETHANOL	AEX	O			021
AMINOETHYLETHANOLAMINE	AEE	O			022
N-AMINOETHYLPIPERAZINE	AEP	O			023
AMYLENE		D			028
AMYL TALLATE		D			030
BEHENYL ALCOHOL		D			039
BENZENESULFONYL CHLORIDE	BSC	O			043
BENZYL ALCOHOL	BAL	D			045
BICYCLIC TERPENEL POLYAMINE AMIDE SALT		D			048
BISPHENOL A DIGLYCIDYL ETHER	BDE	D			049
BUTYLBENZYL PHTHALATE	BPH	D			065
BUTYLENE	BTN	O			066
BUTYLENE GLYCOL		D			067
BUTYLENE POLYGLYCOL		D			069
N-BUTYL ETHER	BTE	O			070
BUTYL HEPTYL KETONE		D			071
ISO-BUTYL METHACRYLATE	BMI	O			072
N-BUTYL METHACRYLATE	BMN	O			073
BUTYL STEARATE		D			075
ISO-BUTYRALDEHYDE	BAD	O			077
BUTYRALDEHYDE (ISO, N, AND MIXTURES)	BAE	O			078
N-BUTYRALDEHYDE	BTR	O			079
GAMMA-BUTYROLACTONE	BLA	D			080
CALCIUM ALKYLPHENATE		D			082
CALCIUM ALKYL SALICYLATE	CAK	D			083
CALCIUM AMINO NONYL PHENOLATE		D			084
CALCIUM CARBOXYLATE		D			085
CETYL ALCOHOL		D			096
CETYL-EICOSYL METHACRYLATE	CEM	O			097
CETYL STEARYL ALCOHOL		D			098
CHLOROACETIC ACID SOLUTION (80% OR LESS)	CHM	O			101
3-CHLOROPROPIONIC ACID	CLP	O			107
M-CHLOROTOLUENE	CTM	O			111
CLEANING SPIRIT (UNLEADED)		D			115
CREOSOTE	CCW	O			116
P-CYME NE	CMP	D			129
N-DECALDEHYDE	DAL	D			130
DECANE	DCC	D			131
1-DECENE	DCE	D			132
DECYL ACRYLATE (ISO, N, AND MIXTURES)	DAT	O			133
N-DECYL ACRYLATE	DAR	O			134
N-DECYL ALCOHOL	DAN	D			135
N-DECYLBENZENE	DBZ	D			136
DETERGENT ALKYLATE		D			137
DIAMMONIUM SALT OF ZINC EDTA (SOLUTION)	DSZ	O			139

TABLE 7. CLASS 5 SUBSTANCES-OTHER HAZARDOUS CARGOS (CONT'D)

20-DEC-85

CHEMICAL NAME	CHRIS CODE	CFR OTHER ROUTE	TLV-TWA PPM	SEQ NO.
DI-N-BUTYLAMINE	DBA	Q		140
DIBUTYL CARBINOL		D		141
M-DICHLOROBENZENE	DBM	Q		143
DICHLOROISOPROPYL ETHER	DCI	Q		149
2,4-DICHLOROPHENOL	DCP	Q		152
1,1-DICHLOROPROPANE	DPB	Q		153
1,3-DICHLOROPROPANE	DPC	Q		155
DIETHYLBENZENE	DEB	D		164
DIETHYLENE GLYCOL DIETHYL ETHER		D		166
DIETHYLENEGLYCOL MONOBUTYL ETHER ACETATE	DEM	D		167
DIETHYLENE GLYCOL MONOBUTYL ETHER	DME	D		168
DIETHYLENE GLYCOL MONOPHENYL ETHER		D		173
DI-(2-ETHYLHEXYL)PHOSPHORIC ACID	DEP	Q		176
DIETHYL SULFATE	DSU	Q		179
DIHEPTYL PHTHALATE	DHP	D		180
DIHEXYL PHTHALATE		D		181
DIISOBUTYLAMINE	DBU	Q		182
DIISOBUTYL CARBINOL	DBC	D		183
DIISOBUTYLENE	DBL	D		184
DIISOBUTYL PHTHALATE	DIT	D		186
DIISODECYL PHTHALATE	DID	D		187
DIISONONYL PHTHALATE	DIN	D		188
DIISOCTYL PHTHALATE	DIO	D		189
DIISOPROPANOLAMINE	DIP	Q		190
DIISOPROPYL BENZENE		D		192
DIMETHYL AMMONIUM-2,4-DICHLOROPHENOXYACE	DDA	Q		198
N,N-DIMETHYLCYCLOHEXYLAMINE	DXN	Q		199
DIMETHYLETHANOLAMINE	DMB	Q		200
2,2-DIMETHYLPROPANE-1,3-DIOL		D		203
DINONYL PHTHALATE		D		204
DI(OCTYLPHENYL)AMINE		D		205
DIPENTENE	DPN	D		208
DI-N-PROPYLAMINE	DNA	Q		213
DIPROPYLENE GLYCOL	DPG	D		214
DISTILLATES: FLASHED FEED STOCKS	DFF	D		216
DISTILLATES: STRAIGHT RUN	DSR	D		217
DIUNDECYL PHTHALATE	DUP	D		218
DODECANE		D		219
DODECANOL	DDN	D		220
DODECENE	DOD	D		221
1-DODECENE	DDC	D		222
DODECYLBENZENE	DDB	D		223
DODECYL DIPHENYL OXIDE DISULFONATE SOLN	DOS	Q		224
DODECYLMETHACRYLATE	DDM	Q		225
DODECYL PENTADECYL METHACRYLATE	DDP	Q		226
DODECYL PHENOL		D		227
EPOXYLATED LINEAR ALCOHOLS, C11-C15		D		229
ETHOXYLATED DODECANOL	EOD	D		233
ETHOXYLATED PENTADECANOL	EOP	D		234
ETHOXYLATED TETRADECANOL	EOT	D		235
ETHOXYLATED TRIDECANOL	ETD	D		236

TABLE 7. CLASS 5 SUBSTANCES-OTHER HAZARDOUS CARGOS (CONT'D)

20-DEC-85 CHEMICAL NAME	CHRIS CODE	CFR OTHER ROUTE	TLV-TWA PPM	SEQ NO.
ETHOXYLATED UNDECANOL		D		237
ETHOXY TRIGLYCOL	ETG	D		238
N-ETHYL-N-BUTYLAMINE	EBA	O		248
ETHYL CYCLOHEXANE	ECY	D		250
ETHYLENE CARBONATE		D		253
ETHYLENE CYANOHYDRIN	ETC	O		255
ETHYLENE GLYCOL DIACETATE	EGY	D		260
ETHYLENE GLYCOL METHYL BUTYL ETHER		D		261
ETHYLENE GLYCOL MONOBUTYL ETHER ACETATE	EMA	D		263
ETHYLENE GLYCOL PHENYL ETHER		D		268
ETHYLENE - PROPYLENE COPOLYMERS		D		271
ETHYLHEXALDEHYDE	EHA	D		273
ETHYLHEXANOIC ACID (ETHYL HEXOIC ACID)		D		274
2-ETHYL HEXANOL	EHX	D		275
2-ETHYLHEXYL ACRYLATE	EAI	O		276
2-ETHYL HEXYLAMINE	EHM	O		277
ETHYL HEXYL PHTHALATE		D		278
ETHYLHEXYL TALLATE	EHT	D		279
ETHYL METHACRYLATE	ETM	O		281
2-ETHYL-3-PROPYLACROLEIN	EPA	O		282
ETHYL TOLUENE	ETE	D		283
FATTY ACID AMIDES		D		284
GAS OIL: CRACKED	GOC	D		292
GLYCERYL TRIACETATE		D		302
GLYCIDYL ESTER OF TERTIARY CARBOXYLIC AC		D		303
GLYCIDYL ESTER OF VERSATIC ACID		D		304
GLYCOLS, RESINS, AND SOLVENTS MIXTURE		D		305
GLYCOL TRIACETATE		D		306
GLYOXAL, 40% SOLUTION	GOS	D		307
GREASE		D		308
HEPTADECANE		D		309
HEPTANOIC ACID	HEP	D		311
HEPTANOL	HTN	D		312
1-HEPTENE	HTE	D		313
HERBICIDE (C15-H22-NO2-CL)		D		314
HEXAETHYLENE GLYCOL		D		315
HEXAMETHYLENEDIAMINE	HMD	O		316
HEXAMETHYLENEDIAMINE SOLUTION	HMC	O		317
HEXAMETHYLENE GLYCOL		D		318
HEXAMETHYLENEIMINE	HMI	O		319
HEXANOL	HXN	D		321
1-HEXENE	HXE	D		322
HOG GREASE		D		325
2-HYDROXYETHYL ACRYLATE	HAI	O		332
ISOBUTYLAMINE	IAM	O		337
ISODECALDEHYDE	IDA	D		338
ISODECYL ACRYLATE	IAI	O		339
ISODECYL ALCOHOL	ISA	D		340
ISOHEXANE	IHA	D		341
ISOCTALDEHYDE	IOC	D		342
ISOPHORONE DIAMINE	IPI	O		344

TABLE 7. CLASS 5 SUBSTANCES-OTHER HAZARDOUS CARGOS (CONT'D)

20-DEC-85

CHEMICAL NAME	CHRIS CODE	CFR OTHER ROUTE	TLV-TWA PPM	SEQ NO.
ISOVALERALDEHYDE	IVA	D		352
JET FUEL: JP-3	JPT	D		354
JET FUEL: JP-4	JPF	D		355
JET FUEL: JP-5 (KEROSENE, HEAVY)	JPV	D		356
LACTIC ACID	LTA	D		358
LARD		D		359
LATEX, LIQUID SYNTHETIC	LLS	D		360
LIQUIFIED NATURAL GAS (OR LPG)	LNG	D		363
MAGNESIUM NONYL PHENOL SULFIDE		D		364
MAGNESIUM SULFONATE		D		365
MALEIC ANHYDRIDE COPOLYMER		D		367
2-MERCAPTOBENZOTHAZOLE (SOLUTIONS)	MBT	D		369
METHOXYTRIGLYCOL	MTG	D		374
METHYL ACETOACETATE		D		376
METHYL-T-BUTYL ETHER	MBE	D		385
2-METHYL-5-ETHYLPYRIDINE	MEP	D		389
METHYL FORMAL	MTF	D		390
2-METHYL-2-HYDROXY-3-BUTYNE	MHB	D		393
METHYL NAPHTHALENE	MNA	D		397
2-METHYL PENTENE	MPN	D		398
2-METHYLPYRIDINE	MPR	D		399
1-METHYLPYRROLIDONE	MPY	D		400
MONOCHLOROTETRAFLUOROETHANE	MTE	D		404
MONOCHLOROTRIFLUOROMETHANE	MCM	D		405
MONOISOPROPANOLAMINE	MPA	D		407
NAPHTHENIC ACID	NTI	D		420
NITROGEN, LIQUIFIED	NXX	D		425
2-NITROPHENOL	NTP	D		427
NONANOIC ACID		D		436
NONANOIC-TRIDECANOIC ACID MIXTURE		D		437
NONENE	NON	D		438
1-NONENE	NNE	D		439
NONYL ALCOHOL		D		440
NONYL PHENOL	NNP	D		441
NONYL PHENOL (ETHOXYLATED)		D		442
NONYL PHENOL SULFIDE (30% OR LESS)		D		443
OCTADECENE		D		444
OCTADECENEAMIDE (OLEAMIDE)		D		445
OCTENE		D		447
OCTYL ACETATE		D		448
ISO-OCTYL ALCOHOL		D		449
N-OCTYL ALCOHOL		D		450
OCTYL EPOXYTALLATE	OET	D		451
OIL: CLARIFIED	OCF	D		453
OIL: DIESEL	ODS	D		455
OIL, EDIBLE: BEECHNUT		D		456
OIL, EDIBLE: CASTOR	OCA	D		457
OIL, EDIBLE: COCOA BUTTER		D		458
OIL, EDIBLE: COCONUT	OCC	D		459
OIL, EDIBLE: COCONUT OIL, ESTERIFIED		D		460
OIL, EDIBLE: COCONUT OIL, FATTY ACID		D		461

TABLE 7. CLASS 5 SUBSTANCES-OTHER HAZARDOUS CARGOS (CONT'D)

20-DEC-85 CHEMICAL NAME	CHRIS CODE	CFR OTHER ROUTE	TLV-TWA PPM	SEQ NO.
OIL, EDIBLE: COCONUT OIL, METHYL ESTER		D		462
OIL, EDIBLE: COD LIVER		D		463
OIL, EDIBLE: CORN		D		464
OIL, EDIBLE: COTTONSEED	OCS	D		465
OIL, EDIBLE: COTTON SEED FATTY ACID		D		466
OIL, EDIBLE: FISH	OFS	D		467
OIL, EDIBLE: GRAPESEED		D		468
OIL, EDIBLE: GROUNDNUT		D		469
OIL, EDIBLE: HAZELNUT		D		470
OIL, EDIBLE: LARD	OLD	D		471
OIL, EDIBLE: MAIZE		D		472
OIL, EDIBLE: MUSTARD SEED		D		473
OIL, EDIBLE: NUTMEG BUTTER		D		474
OIL, EDIBLE: OLIVE	OOL	D		475
OIL, EDIBLE: PALM	OPM	D		476
OIL, EDIBLE: PEANUT	OPN	D		477
OIL, EDIBLE: POPPY		D		478
OIL, EDIBLE: RAISIN SEED		D		479
OIL, EDIBLE: RAPESEED		D		480
OIL, EDIBLE: RICE BRAN		D		481
OIL, EDIBLE: SAFFLOWER	OSF	D		482
OIL, EDIBLE: SALAD		D		483
OIL, EDIBLE: SESAME		D		484
OIL, EDIBLE: SOYA BEAN	OSB	D		485
OIL, EDIBLE: SOYBEAN (EPOXIDIZED)		D		486
OIL, EDIBLE: SUNFLOWER SEED		D		487
OIL, EDIBLE: TUCUM	OTC	D		488
OIL, EDIBLE: VEGETABLE	OVG	D		489
OIL, EDIBLE: WALNUT		D		490
OIL, FUEL: NO. 2	OTW	D		493
OIL, FUEL: NO. 2-D	OTD	D		494
OIL, FUEL: NO. 4	OFR	D		495
OIL, FUEL: NO. 5	OFV	D		496
OIL, FUEL: NO. 6	OSX	D		497
OIL, MISC: ABSORPTION	OAS	D		498
OIL, MISC: ANIMAL		D		500
OIL, MISC: CASHEW NUT SHELL	OCN	O		503
OIL, MISC: COAL TAR	OCT	D		505
OIL, MISC: CROTON	OCR	D		506
OIL, MISC: GAS, LOW POUR		D		507
OIL, MISC: GAS, LOW SULFUR		D		508
OIL, MISC: LANOLIN		D		510
OIL, MISC: LINSEED	OLS	D		511
OIL, MISC: MINERAL SEAL	OMS	D		514
OIL, MISC: NEATSFOOT	ONF	D		516
OIL, MISC: OITICIA		D		517
OIL, MISC: PENETRATING	OPT	D		518
OIL, MISC: PERILLA		D		519
OIL, MISC: PILCHARD		D		520
OIL, MISC: PINE		D		521
OIL, MISC: RANGE	ORG	D		522

TABLE 7. CLASS 5 SUBSTANCES-OTHER HAZARDOUS CARGOS (CONT'D)

20-DEC-85 CHEMICAL NAME	CHRIS CODE	CFR OTHER ROUTE	TLV-TWA PPM	SEQ NO.
OIL, MISC: RESIDUAL		D		523
OIL, MISC: RESIN	ORS	D		524
OIL, MISC: RESINOUS PETROLEUM		D		525
OIL, MISC: ROAD	ORD	D		526
OIL, MISC: ROSIN	ORN	D		527
OIL, MISC: SEAL		D		528
OIL, MISC: SOAPSTOCK		D		529
OIL, MISC: SPERM	OSP	D		530
OIL, MISC: SPINDLE	OSD	D		531
OIL, MISC: SPRAY	OSY	D		532
OIL, MISC: TALL	OTL	D		533
OIL, MISC: TALL, FATTY ACID		D		534
OIL, MISC: TANNER'S	OTN	D		535
OIL, MISC: TRANSFORMER	OTF	D		536
OIL, MISC: TUNG		D		537
OIL, MISC: TURBINE	OTB	D		538
OIL, MISC: WHALE		D		539
OIL, MISC: WOOD		D		541
OLEIC ACID	OLA	D		542
OLEYL ALCOHOL (OCTADECANOL)		D		544
ORGANIC AMINE 70		D		545
PENTACHLOROETHANE	PCE	O		549
PENTADECANOL	PDC	D		550
1,3-PENTADIENE	PDI	O		551
PENTAETHYLENE GLYCOL		D		552
1-PENTENE	PTE	D		554
PETROLATUM	PTL	D		556
PHOSPHORIZED BICYCLIC TERPENE		D		559
PHTHALATE PLASTICIZERS		D		561
PINENE		D		563
POLYALKENYL SUCCINIC ANHYDRIDE AMINE		D		564
POLYAMINE, AMIDE MIXTURE		D		565
POLYBUTENE	PLB	D		566
POLYETHYLENE GLYCOL		D		567
POLYETHYLENE POLYAMINES	PEB	O		568
POLYISOBUTYLENE		D		569
POLYMERIZED ESTER		D		570
POLYPROPYLENE	PLP	D		572
POLYPROPYLENE GLYCOL	PQC	D		573
POLYPROPYLENE GLYCOL METHYL ETHER	PGM	D		574
POLYSTYRENE DIALKYL MALEATE		D		575
POLYVINYL BENZYLTRIMETHYL AMMONIUM CHLORI	PVB	O		576
N-PROPANOLAMINE	PLA	O		578
PROPIONIC ANHYDRIDE	PAH	O		581
PROPYL BENZENE		D		586
PROPYLENE BUTYLENE POLYMER	PBP	D		588
PROPYLENE GLYCOL	PPG	D		589
PROPYLENE POLYMER		D		592
PROPYLENE TETRAMER	PTT	D		593
PROPYLENE TRIMER		D		594
RUM		D		597

TABLE 7. CLASS 5 SUBSTANCES-OTHER HAZARDOUS CARGOS (CONT'D)

20-DEC-85 CHEMICAL NAME	CHRIS CODE	CFR OTHER ROUTE	TLV-TWA PPM	SEQ NO.
SODIUM ACETATE, GLYCOL, WATER SOLUTIONS		D		601
SODIUM BOROXYDRIIDE (13%)	SBI	O		602
SODIUM CHLORATE (50% OR LESS)	SDD	O		604
SODIUM HYPOCHLORITE SOLUTION (<=15%)	SHP	O		607
SODIUM 2-MERCAPTOBENZOTHAZOL SOLUTION	SMB	O		608
SODIUM SULFONATE		D		609
STEARIC ACID	SRA	D		610
STEARYL ALCOHOL (OCTADECANOL)		D		611
SULFOLANE	SFL	D		613
SULFUR	SXX	O		614
TALLOW	TLO	D		618
TALLOW FATTY ALCOHOL	TFA	D		619
TALLOW NITRILE		D		620
TETRADECANOL	TTN	D		622
1-TETRADECENE	TTD	D		623
TETRADECYL BENZENE	TDB	D		624
TETRAETHYLENE GLYCOL	TTG	D		625
TETRAETHYLENEPENTAMINE	TTP	O		626
TETRAHYDRONAPHTHALENE	THN	D		628
TETRAPROPYL BENZENE		D		629
TOLUENEDIAMINE	TDA	O		632
TRIARYLPHOSPHATE		D		636
TRIDECANE		D		643
TRIDECANOIC ACID		D		644
TRIDECANOL	TDN	D		645
1-TRIDECENE	TDC	D		646
TRIDECYL BENZENE		D		647
TRIETHANOLAMINE	TEA	O		648
TRIETHYLBENZENE	TEB	D		650
TRIETHYLENE GLYCOL	TEG	D		651
TRIETHYLENE GLYCOL DIETHYL BUTYRATE		D		652
TRIETHYLENE GLYCOL MONOMETHYL ETHER		D		653
TRIETHYLENETETRAMINE	TET	O		654
TRIETHYL PHOSPHATE		D		655
TRIISOCTYL TRIMELLITATE		D		656
TRIISOPROPANOLAMINE	TIP	O		657
2,2,4-TRIMETHYL PENTANEDIOL-1,3-DIISOBUT		D		658
TRIMETHYLACETIC ACID	TAA	O		659
TRIMETHYL HEXAMETHYLENE DIAMINE(224,244)	THA	O		661
TRIMETHYL HEXAMETHYLENE DIISOCYANATE	THI	O		662
2,2,4-TRIMETHYL-3-PENTANOL-1-ISOBUTYRATE		D		663
TRIPROPYLENE		D		665
TRIPROPYLENE GLYCOL	TGC	D		666
TRIPROPYLENE GLYCOL MONOMETHYL ETHER		D		667
TRIXYLOXYL PHOSPHATE		D		668
UNDECANOL	UND	D		671
1-UNDECENE	UDC	D		672
N-UNDECYLBENZENE	UDB	D		673
VINYL ACETATE, FUMARATE COPOLYMER		D		678
VINYL ETHYL ETHER	VEE	O		680
VINYL NEODECANATE	VND	O		682



TABLE 7. CLASS 5 SUBSTANCES-OTHER HAZARDOUS CARGOS (CONT'D)

20-DEC-85

CHEMICAL NAME

CHRIS  
CODE

CFR

OTHER  
ROUTE

TLV-TWA  
PPM

SEQ  
NO.

WAX: CANDELILLA

WAX: CARNAUBA

WAX: PETROLEUM

WINE

WOOL GREASE

XYLENE PARASOL

XYLENOL

D

WCA D

D

D

D

D

XYL O

684

685

687

691

692

696

697

TOTAL OF 364 ITEM(S) IN TABLE

TABLE 8. CLASS 6 SUBSTANCES-NONCARGO SUBSTANCES WITH TOXIC HAZARD

20-DEC-85 CHEMICAL NAME	CHRIS CODE	CFR OTHER ROUTE	TLV-TWA PPM	SEQ NO.
ASBESTOS--AMOSITE			0.5 F/CC	032
ASBESTOS--CHRYSTOTILE			2 F/CC	033
ASBESTOS--CROCIDOLITE			0.2 F/CC	034
ASBESTOS--OTHER			2 F/CC	035
BERYLLIUM			.002 MG/M3	047
CADMIUM			0.05 MG/M3	081
CARBON MONOXIDE			50	092
CHROMIUM (VI)			0.05 MG/M3	114
FLUORIDES			2.5 MG/M3	286
HYDROGEN SULFIDE			10.0	331
LEAD DUST			0.15 MG/M3	361
LEAD FUMES			0.15 MG/M3	362
MANGANESE (FUME)			1.0 MG/M3	368
MERCURY			0.05 MG/M3	370
NICKEL			1.0 MG/M3	421
NITROGEN OXIDES			3	426
OZONE			0.1	546
PAINT PIGMENTS (DRY)			1.0 MG/M3	547
SAND			0.3 MG/M3	598
SILICA			0.3 MG/M3	599
TITANIUM			5.0 MG/M3	630
VANADIUM			0.05 MG/M3	676
WELDING FUMES			5.0 MG/M3	688
ZINC			5.0 MG/M3	698

TOTAL OF 24 ITEM(S) IN TABLE

### III. HSDS PROGRAM

A computerized data base of the hazardous substances data was created to more effectively and more easily manage this large volume of information. A system was needed which would allow a user to extract, change, delete or add data in a logical manner. As a result, a set of small computer codes has been written to develop and utilize the hazardous substance data system (HSDS).

#### III.1 Code Description

All computer programs written and used to initially create the data base and currently manage it are in the FORTRAN 77 language. The programs are presently run on a Digital Equipment Corporation (DEC) PDP11/70 central processor unit with the RSX-11M operating system. However, the two codes necessary to manage the data base should be easily adaptable to other machines with FORTRAN 77 compilers and 64K word memory. The data files which contain the data base itself require 2.4 megabyte disk storage space.

As mentioned earlier, the HSDS program consists of a set of relatively small computer codes. All but two of the codes were used only in the initialization of the data base and are no longer necessary to access or manage the data. The two remaining codes, CGEDIT and CGTAB, will be described in detail in this section. Their basic functions are to change a data base entry in some way and to create a tabular listing of entries which have been sorted by some common characteristic.

#### III.2 HSDS Program Utilization

The data base itself resides in 26 separate direct access files denoted CG\$\$\$.DAT, where \$\$ ranges from 01 to 26. The information contained in the files corresponds to 26 columns of data which can be accessed by the HSDS programs. The columns correspond to the 22 substance characteristics described in Section II with an additional column for storing a sequence or identification number for each substance in the data base and three additional columns of information used internally during the development of the data base

but not discussed in this report. Access to the information in the data base is acquired using the two computer codes, CGEDIT and CGTAB.

Program CGEDIT is the main editor of the data base. It is used to change stored information about a substance. Three options are available:

- 1) delete an entire data base record,
- 2) change one or more single entries (columns) in a data base record,
- or 3) add one or more new records to the data base.

(As discussed here, a record refers to a complete set of information about one hazardous substance. Each record contains 26 entries or columns as described in Table 9.) Each option requires input of the sequence or identification number of the record to delete, change, or add a record behind it. All changes are made permanent to the data base, so the old files should be saved in other files as a backup system before beginning a session with the editor program.

In order to view changes made with CGEDIT or create any kind of sorted list of items in the data base, program CGTAB must be utilized. This program allows the user to obtain a tabular listing of the entire data base or a listing of a certain portion of the data base which has common characteristics. The program creates a table by sorting through all data base records to match a user-requested characteristic value. The user then inputs which entries (columns) are desired to be included in a table. The number of printed column entries cannot exceed 132 characters in length. If the user requests a table printout which exceeds this length, an error is transmitted. The program creates the table by extracting from each data base file the information corresponding to those records which were identified in the sort, and storing the data in a file named CTAB.DAT.

TABLE 9. IDENTIFICATION NUMBERS FOR DATA BASE RECORDS

<u>Identification Number</u>	<u>Data Base Record Abbreviation*</u>
1	CHEMICAL NAME
2	CHRIS CODE
3	CFR
4	OTHER ROUTE
5	TLV-TWA PPM
6	STEL PPM
7	IDLH PPM
8	ODOR PPM
9	CS PPM
10	CS/TWA
11	TOX CODE
12	CARC REF
13	SEQ NO
14	NFPA NAS
15	AIR DATA (not used in this report)
16	QUAN CODE (not used in this report)
17	SEC PROD
18	CAS
19	EMRSP GUIDE
20	MSDS (not used in this report)
21	BIO MED
22	NIOSH GUIDE
23	BIO MON
24	QUAL DT
25	QUAN DT
26	TLV DT

\*Described in Table 1 and discussed in Section II.2.

Sorting on a column is accomplished by comparing each record entry in the column to a check value using one of the following logical operators:

<u>Operator</u>	<u>Equivalent Symbol</u>	<u>Description</u>
.EQ.	=	Equal
.LT.	<	Less than
.GT.	>	Greater than
.LE.	≤	Less than or equal
.GE.	≥	Greater than or equal
.NE.	≠	Not equal

Multiple sorts are possible by inputting successive check values and operators. The final entries in the table written to file CTAB.DAT are 1) a designation of the number of records in the table and 2) an optional printing of several footnotes about the overall data base. The latter entry is usually printed when a table of the entire data base is requested.

A brief overview of the two programs necessary to manage the HSDS has been presented in this section. It is intended to describe the contents of the data base and the options available for accessing these contents, but is not presented as a complete user's guide to the HSDS. Listings of computer codes CGEDIT and CGTAB are, however, included in Appendix A to demonstrate program flow.

## REFERENCES

1. Prevost, R. J. and Johnson, D. E., A Medical Monitoring Program for the Marine Hazardous Chemical Worker, Volume I, Task III Final Report, SwRI Project 06-7223, USDOT Contract DTCG23-82-C-20027, July 1985.
2. Prevost, R. J. and Hammond, J. W., Biochemical and Medical Information for Marine Hazardous Substances, Volume III, Task III Final Report, SwRI Project 06-7223, USDOT Contract DTCG23-82-C-20027, July 1985.
3. TLVs, Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment with Intended Changes for 1983-84, The American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio, 1984.
4. Listing of All Chemicals Regulated in the CFR, U. S. Coast Guard, Cargo and Hazards Branch, 19 May 1983.
5. Chemical Data Guide for Bulk Shipment by Water, United States Coast Guard Document CIM 16616.6, 1982.
6. NIOSH/OSHA Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health Publication No. 78-210, 1978.
7. Hellman, T. M. and Small, F. H., Characterization of the Odor Properties of 101 Petrochemicals Using Sensory Methods, J. Air Pollution Control Association, 24:979-982, 1963.
8. Amore, J. E. and Hautala, E., Odor as an Aid to Chemical Safety: Odor Thresholds Compared with Thresholds Limit Values and Volatiles for 214 Ind. Chemicals in Air and Water Dilutions, J. Applied. Tox., Vol. 3, No. 6, pp. 272-290, 1983.
9. Vershreven, K. A., Handbook of Environmental Data on Organic Chemicals, Van Nostrand Reinhold, New York, New York, 2nd Edition, 1983.

10. Personal Communication with Professor J. W. Hammond, C.I.H., University of Texas School of Public Health, Houston, Texas, 1984.
11. Letter from Commander J. F. McGowan, Chief, Cargo and Hazards Branch, U. S. Coast Guard, to Mr. J. Christopher Buckingham, Southwest Research Institute, dated August 17, 1984.
12. Registry of Toxic Effects of Chemical Substances, U. S. Department of Health and Human Services, National Institute for Occupational Safety and Health, 1980.
13. Fire Protection Guide on Hazardous Materials, Code 704M, 4th edition, National Fire Protection Association, Boston, Mass., 1972.
14. Evaluation of the Hazard of Bulk Water Transportation of Industrial Chemicals, A Tentative Guide, National Academy of Sciences, Committee on Hazardous Materials, Washington, D.C., 1972.
15. 1984 Emergency Response Guidebook, U. S. Department of Transportation, Document No. DOT P 5800.3, 1984.
16. Occupational Health Guidelines for Chemical Hazards, U. S. Department of Health and Human Services, National Institute for Occupational Safety and Health, Publication No. 81-213, 1981.
17. Communication with LCDR R. J. Prosser, USCG Hazardous Materials Branch (G-MTH-1), Washington, D.C., November 1985.



**APPENDIX A**  
**Listing of Hazardous Substances Data**

## LISTING OF HAZARDOUS SUBSTANCES DATA

This appendix presents the data currently being maintained in the HSDS. Three tables of data are provided. Tables A-1 and A-2 present a complete set of data for Class 1 and Class 2 substances, respectively. A master listing of the complete set of data for all classes of substances is presented in Table A-3.

In each of the tables, the data are presented alphabetically, by chemical name, with data for the first ten substance characteristics (as listed in Table 1 and discussed in Section II of the text) on one page followed by data for the remaining substance characteristics on the second page. The chemical name is presented on both pages for convenience. Thus, for any specific chemical substance, the location in the table is determined by searching the listing alphabetically, with the data for that substance being found on two adjacent pages.

A sequence number (SEQ NO.) is indicated with each line of data. In the master listing, Table A-3, the sequence numbers begin with 001 and proceed consecutively to 699. This same sequence number is presented with the data for a given substance in Tables 3-8 in the main body of this report, and in Tables A-1 and A-2 of this appendix.

The data presented in Tables A-1 and A-2 for a given substance are identical to the data for that substance presented in Table A-3. The purpose of this duplication is to provide the data for Class 1 (Table A-1) and Class 2 (Table A-2) separately because of the importance placed on these two classes of substances.

TABLE A-1. DATA FOR CLASS 1 SUBSTANCES

20-DEC-89 CHEMICAL NAME	CHRS CODE	CFR CODE	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA SEC NO.
ACRYLONITRILE	ACN	0	SKIN	2		4000	21.0	1.1E5	5.5E4 011
BENZENE	BNZ	0		10	25	2000	2.0	9.9E4	9.9E3 040
BENZENE HYDROCARBON MIX (> OR = 10% BEN)	BHS	0		10	25				041
BENZENE HYDROCARBON MIX (WITH ACETYLENE)	BHA	0		10	25				042
BENZENE, TOLUENE, XYLENE MIXTURE	BTX	0		10	25	2000	0.01	9.9E4	2.0E4 044
BUTADIENE (1,3 BUTADIENE)	BDI	0		10	15	20000	0.4	1.0E6	1.0E3 050
BUTADIENE, BUTYLENE MIX WITH ACETYLENES	BBM	0		10	15	20000			051
CARBON TETRACHLORIDE	CBT	0	SKIN	5	20	300	21.0	1.2E5	2.4E4 073
CHLOROFORM	CRF	0		10	50	1000	200.0	2.1E5	2.1E4 103
ETHYLENE DIBROMIDE	EDB	0	SKIN			400	26.0	1.2E4	2.5E3 257
ETHYLENE OXIDE	EOX	0				800	500.0	1.0E6	1.0E5 269
ETHYLENE OXIDE, PROPYLENE OXIDE MIXTURE	EPH	0		1		1400	500.0		270
FORMALDEHYDE SOLUTION	FMS	0		1	2	100	0.8	1.7E3	287
NITROPROPANE (1-, 2-, AND MIXTURES)	NPP	0		10 (2-)	20 (2-)	2300	75.0		429
2-NITROPROPANE	NPP	0		10	20	2300	300.0	1.7E4	6.8E2 430
NITROPROPANE (40%), NITROETHANE (40%)	NEM	0		10 (2-)	20 (2-)	2300	83.0		431
O-TOLUIDINE	TLI	0	SKIN	2		100	1.0	1.3E2	6.5E1 435
VINYL CHLORIDE	VCH	0		5		500	260.0	1.0E6	2.0E5 679

TOTAL OF 18 ITEM(S) IN TABLE

TABLE A-1. DATA FOR CLASS 1 SUBSTANCES (CONT'D)

20-DEC-85 CHEMICAL NAME	TOX CODE	CARC REF	NFPA SEC PROD	CAS	EMRSP GUIDE	BIO MED	NIOSH GUIDE	BIO MON	GUAL DT	QUAN DT	TLV DT	SEQ NO.
ACRYLONITRILE	1	A1	4313	107-13-1		X			U	DG	DG	011
BENZENE	1	A2	2113	71-43-2	27	X			U	DG	DG	040
BENZENE HYDROCARBON MIX (> OR = 10% BEN)	1	A2	----							D	D	041
BENZENE HYDROCARBON MIX (WITH ACETYLENE)	1	A2	----							D	D	042
BENZENE, TOLUENE, XYLENE MIXTURE	1	A2	-113		27					D	D	044
BUTADIENE (1,3 BUTADIENE)	1	A2	2111	106-99-0	17	X		X		DG	DG	050
BUTADIENE, BUTYLENE MIX WITH ACETYLENES	1	A2	----							D	D	051
CARBON TETRACHLORIDE	1	A2	3214	56-23-5	55	X		X		DG	DG	093
CHLOROFORM	1	A2	2212	67-66-3	55	X		X		DG	DG	103
ETHYLENE DIBROMIDE	1	A2	3113	106-93-4	55	X		X		DG	DG	257
ETHYLENE OXIDE	1	A2	2332	75-21-8	69	X		X		DG	G	269
ETHYLENE OXIDE, PROPYLENE OXIDE MIXTURE	1	A2	----		26					D	DG	270
FORMALDEHYDE SOLUTION	1	A2	2323	50-00-0	29	X		X		DG	DG	287
NITROPROPANE (1-, 2-, AND MIXTURES)	1	A2	----		26							429
2-NITROPROPANE	1	A2	1111	79-46-9	26	X						430
NITROPROPANE (60%), NITROETHANE (40%)	1	A2	----		26							431
O-TOLUIDINE	1	A2	3----	95-53-4	55	X		X		G		635
VINYL CHLORIDE	1	A1	2212	75-01-4	17	X		X		DG	DG	679

TOTAL OF 18 ITEM(S) IN TABLE

TABLE A-2. DATA FOR CLASS 2 SUBSTANCES

CHEMICAL NAME	CHRIS CODE	CFR OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	DDOR PPM	CS PPM	CS/TWA SEG NO.
20-DEC-85								
ACETONE CYANOHYDRIN	ACY	0	SKIN	0.25			1.1E3	4.2E3 005
ALLYL ALCOHOL	ALA	0	SKIN	2	150	0.78	2.2E4	1.1E4 019
ALLYL CHLORIDE	ALC	0		1	300	0.21	3.9E3	3.9E3 020
AMMONIA, ANHYDROUS	ANA	0		25	500	4.2	1.0E6	4.0E4 024
ANILINE	ANL	0	SKIN	2	100	1.0	7.9E2	4.0E2 031
BENZYL CHLORIDE	BCL	0		1	10	0.4	1.2E4	1.2E4 046
BUTYLAMINE (ALL ISOMERS)	BTY	0	SKIN	C5	2000	0.24	2.9E5	5.7E4 061
N-BUTYLAMINE	BAH	0	SKIN	C5		1.8	1.1E5	2.2E4 062
SEC-BUTYLAMINE	BTL	0	SKIN	C5			1.8E5	3.7E4 063
TERT-BUTYLAMINE	BUA	0	SKIN	C5		0.1	3.9E5	8.9E4 064
CARBON DISULFIDE	CSB	0	SKIN	10	500	0.35	1.0E6	3.9E4 091
CHLORINE	CLX	0		3	25			1.0E6 100
CHLOROSULFONIC ACID	CSA	0		1				109
CROTONALDEHYDE	CTA	0		2	400	0.2	3.9E4	2.0E4 122
2,2'-DICHLOROETHYL ETHER	DEE	0	SKIN	5	250	15.0	5.3E2	1.1E2 148
DICHLORODIFLUOROMETHANE	DFM	0		10		150.0	1.0E6	1.0E5 151
1,3-DICHLOROPROPENE	DPU	0	SKIN	1	10	1.5	1.4E5	1.4E5 156
DICHLOROPROPENE (1,1- 1,2- 1,3- AND MIX)	DPS	0	SKIN	1	10			157
DICHLOROPROPENE, DICHLOROPROPANE MIXTURE)	DMX	0	SKIN	1	10	1.5		158
DIISOPROPYLAMINE	DIA	0	SKIN	5	1000	0.4	9.2E4	1.8E4 191
DIMETHYLAMINE	DMA	0		10	2000	0.05	1.0E6	1.0E5 194
DIMETHYLAMINE SOLUTION (45% OR LESS)	DMG	0		10	2000			195
DIMETHYLAMINE SOLUTION (>45% AND <55%)	DMY	0		10	2000		4.2E5	196
DIMETHYLAMINE SOLUTION (55% AND <65%)	DMC	0		10	2000			197
1,4-DIOXANE	DOX	0	SKIN	25	200	1.8	3.6E4	1.4E3 207
DIPHENYLMETHANE DIISOCYANATE	DFM	0		CO.02	20			6.6E1 212
EPICHLOROHYDRIN	EPC	0	SKIN	2	100	0.93	1.6E4	8.0E3 228
ETHYLAMINE	EAM	0		10	4000	0.83	1.0E6	1.0E5 242
ETHYLAMINE (40% OR LESS)	EAO	0		10	4000	0.83		243
ETHYLAMINE (72% OR LESS)	EAM	0		10	4000	0.83		244
ETHYLENE DICHLORIDE	EDC	0		10	1000	40.0	1.3E5	1.3E4 258
GLUTARALDEHYDE (50% OR LESS)	GTA	0		CO.2		0.04	2.2E4	1.1E5 300
HYDROCHLORIC ACID	HCL	0		C5	100	1.0	2.8E5	326
HYDROFLUORIC ACID	HFA	0		3	100	0.04		328
HYDROGEN CHLORIDE	HDC	0		C5	100	1.0	1.0E6	2.0E5 329
HYDROGEN FLUORIDE	HFX	0		3	20	0.04	1.0E6	3.3E5 330
ISOPROPYLAMINE	IPP	0		5	4000	0.7	6.1E5	1.2E5 349
ISOPROPYLAMINE (90% OR LESS)	IPD	0		5	4000			350
METHYLAMINE SOLUTION (42% OR LESS)	MSZ	0		10	100	0.02	1.0E6	1.0E5 380
METHYL BROMIDE	MTB	0	SKIN	5	2000	0.23	1.0E6	2.0E5 383
METHYL CHLORIDE	MTC	0		50	1000			2.0E4 386
MOTOR FUEL, ANTIKNOCK CMPS (PB ALKYL8)	MFA	0	SKIN	0.10 MG/M3	40	0.2	6.6E3	409
NITRIC ACID	NAC	0		2	100	4	3E4	2.2E4 422
NITRIC ACID (70% OR LESS)	NCID	0		2	100	4	3E4	2.2E4 423
NITROBENZENE	NTB	0	SKIN	1	200	0.0	2.6E2	2.6E2 424
PHENOL	PHN	0	SKIN	5	100	0.2	4.7E2	9.4E1 557
PHOSPHORUS, WHITE	PPW	0		0.1 MG/M3				560
PROPYLENE OXIDE	POX	0		20	2000	65.0	5.9E5	2.9E4 591
STYRENE	STY	0		50	5000	0.15	6.6E3	1.3E2 612
SULFUR DIOXIDE	SFD	0		2	100	1.0	1.0E6	5.0E5 615
1,1,2,2-TETRACHLOROETHANE	TEC	0	SKIN	1	150	2.6	1.7E4	1.7E4 621

TABLE A-2. DATA FOR CLASS 2 SUBSTANCES (CONT'D)

20-DEC-85	TOX	CARC	NFPA	SEC	CAS	EMRSP	BIO	NIOSH	BIO	QUAL	QUAN	TLV	SEQ
CHEMICAL NAME	CODE	REF	NAS	PROD		GUIDE	MED	GUIDE	MON	DT	DT	DT	NO
ACETONE CYANDHYDRIN	2		4124		75-86-5	55				G			005
ALLYL ALCOHOL	2		3323		107-18-6	28	X	X		D			019
ALLYL CHLORIDE	2		3323		107-05-1	28	X	X					020
AMMONIA, ANHYDROUS	2		3422		7664-41-7	15	X	X		DG	DG	DG	024
ANILINE	2		3113		62-53-3	57	X	X	U	DG	DG	DG	031
BENZYL CHLORIDE	2		2442		100-44-7	59	X	X		DG	DG	G	046
BUTYLAMINE (ALL ISOMERS)	2		-344		109-73-9	68	X			D			061
N-BUTYLAMINE	2		2444		109-73-9	68		X		DG	DG	G	062
SEC-BUTYLAMINE	2		3344		109-73-9	68				D			063
TERT-BUTYLAMINE	2		-----		109-73-9	68				D			064
CARBON DISULFIDE	2		2223		75-15-0	28	X	X		DG	DG	DG	091
CHLORINE	2		3424		7782-50-5	20	X	X		DG	DG	DG	100
CHLOROSULFONIC ACID	2		3444	HCL	7790-94-5	39				D			109
CROTONALDEHYDE	2		3333		123-73-9	28	X	X		D			122
2,2'-DICHLOROETHYL ETHER	2		-323		111-44-4	57	X	X					148
DICHLOROMONOFUOROMETHANE	2		-----		75-43-4	12	X	X					151
1,3-DICHLOROPROPENE	2		-223		542-75-6	29	X						156
DICHLOROPROPENE (1,1- 1,2- 1,3- AND MIX)	2		-----		542-75-6	29							157
DICHLOROPROPENE, DICHLOROPROPANE MIXTURE)	2		-----		8003-19-8	29							158
DIISOPROPYLAMINE	2		3324		108-18-9	68	X	X		DG	DG	G	191
DIMETHYLAMINE	2		3222		124-40-3	19	X	X		DG	DG	G	194
DIMETHYLAMINE SOLUTION (45% OR LESS)	2		-----		124-40-3	26				D			195
DIMETHYLAMINE SOLUTION (>45% AND <=55%)	2		-----		124-40-3	26							196
DIMETHYLAMINE SOLUTION (55% AND <65%)	2		-----		124-40-3	26							197
1,4-DIOXANE	2		2113		123-91-1	26	X	X		DG			207
DIPHENYL METHANE DIISOCYANATE	2		-324		101-68-8		X						212
EPICHLOROHYDRIN	2		3334		106-89-8	30	X	X		DG	DG	G	228
ETHYLAMINE	2		3323		75-04-7	68	X	X		DG	DG	G	242
ETHYLAMINE (40% OR LESS)	2		-----		75-04-7	29	X						243
ETHYLAMINE (72% OR LESS)	2		-----		75-04-7	29	X	X		D			244
ETHYLENE DICHLORIDE	2		2223		107-06-2	26	X	X		DG	DG		258
GLUTARALDEHYDE (50% OR LESS)	2		-----		111-30-8		X			D			300
HYDROCHLORIC ACID	2		3332		7647-01-0	15				DG	DG	D	326
HYDROFLUORIC ACID	2		4444		7664-39-3	15				G			328
HYDROGEN CHLORIDE	2		3433		7647-01-0	15	X	X		DG	DG	DG	329
HYDROGEN FLUORIDE	2		4444		7664-39-3	15	X	X		DG	DG	DG	330
ISOPROPYLAMINE	2		3324		75-31-0	68	X	X		DG	DG	G	349
ISOPROPYLAMINE (90% OR LESS)	2		-----		75-31-0	68	X			D			350
METHYLAMINE SOLUTION (42% OR LESS)	2		-----		74-89-5	68	X			G	G	G	380
METHYL BROMIDE	2		-----		74-83-9	55	X	X		DG	DG	D	383
METHYL CHLORIDE	2		2002		74-87-3	18	X	X		D			386
MOTOR FUEL ANTIKNOCK CMPDS (PB ALKYLs)	2		-----		78-00-2	56							409
NITRIC ACID	2		2343		7697-37-2	44	X	X		DG	DG	DG	422
NITRIC ACID (70% OR LESS)	2		-----		7697-37-2	44	X	X		D			423
NITROBENZENE	2		3324		98-95-3	55	X	X	U				424
PHENOL	2		3233		108-95-2	55	X	X	U	DG	DG	DG	557
PHOSPHORUS, WHITE	2		3-44		7723-14-0								560
PROPYLENE OXIDE	2		2322		75-56-9	26	X	X		DG	DG		591
STYRENE	2		2222		100-42-5	27	X	X	UB	G	G	G	612
SULFUR DIOXIDE	2		3414		7446-09-5	16	X	X		DG	DG	DG	615
1,1,2,2-TETRACHLOROETHANE	2		-----		79-34-5	55	X	X		G	G	G	621

TABLE A-2. DATA FOR CLASS 2 SUBSTANCES (CONT'D)

20-DEC-85 CHEMICAL NAME	CHRIS CODE	CFR CODE	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA PPM	SEQ NO.
TOLUENE 2,4-DIISOCYANATE	TDI	0		005	02	10	0.21	1.3E1	2.6E2	633
TOLUENE DIISOCYANATE, DIPHENYLMET	TDD	0		005	02	10	0.21	1.3E1		634
TRICHLOROETHYLENE	TCL	0		50	150	1000	21.4	7.6E4	1.5E3	639
VINYL ACETATE	VAM	0		10	20	5000	0.4	1.2E5	1.2E4	677
VINYLDENECHLORIDE	VCI	0		5	20	5000	500.0	5.3E5	1.6E5	681

TOTAL OF 56 ITEM(S) IN TABLE

TABLE A-2. DATA FOR CLASS 2 SUBSTANCES (CONT'D)

20-DEC-85 CHEMICAL NAME	TOX CODE	CARC REF	NFPA SEC	CAS	EMRSP GUIDE	BID MED	NIOSH GUIDE	BIO MON	QUAL DT	QUAN DT	TLV DT	SEQ NO.
TOLUENE 2,4-DIISOCYANATE	2		3334	594-84-9	57	X			D			633
TOLUENE DIISOCYANATE, DIPHENYLMET DIISOC	2		-----									634
TRICHLOROETHYLENE	2		-112	79-01-6	74	X		UB	DG			G 639
VINYL ACETATE	2		2112	108-05-4	26	X			DG			G 677
VINYLDIENECHLORIDE	2		2223	75-35-4	26	X			DG			G 681

TOTAL OF 56 ITEM(S) IN TABLE



20-DEC-85

## CHEMICAL NAME

TABLE A-3. MASTER LISTING OF HSDS DATA

CHEMICAL NAME	CHRS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	DDOR PPM	CS PPM	CS/TWA NO.	SEQ NO.
ACETALDEHYDE	AAD	D		100	150	10000	0.21	9.9E5	9.9E3	001
ACETIC ACID	AAC	D		10	15	1000	0.21	1.5E4	1.5E3	002
ACETIC ANHYDRIDE	ACA	D		CS		1000	0.36	5.3E3	1.1E3	003
ACETONE	ACT	D		750	1000	20000	132.5	2.4E5	3.2E2	004
ACETONE CYANOHYDRIN	ACY	D	SKIN	0.25			1.1E3	4.2E3	005	
ACETONITRILE	ATN	D	SKIN	40	60	4000	39.8	9.6E4	2.4E3	006
ACETOPHENONE	ACP	D		1			0.6	1.3E3	1.3E3	007
ACETYL TRIBUTYL CITRATE		D								008
ACRYLAMIDE (50% OR LESS)	AAM	D	SKIN	0.3	0.6	MG/M3				009
ACRYLIC ACID	ACR	D		10			1.0	4.1E3	4.1E2	010
ACRYLONITRILE	ACN	D	SKIN	2		4000	21.0	1.1E5	5.5E4	011
ADIPONITRILE	ADN	D		50			0.78			012
ALCOHOLS (MIXED)		D								013
ALKENYL SUCCINIC ACID		D								014
ALKENYLSUCCINIC ANHYDRIDE		D								015
ALKYLBENZENESULFONIC ACIDS	ABS	D		1	MG/M3					016
N-ALKYL PHTHALATES		D								017
ALKYL SUCCINATE FORMALDEHYDE HYDROXY AM		D								018
ALLYL ALCOHOL	ALA	D	SKIN	2	4	150	0.78	2.2E4	1.1E4	019
ALLYL CHLORIDE	ALC	D		1	2	300	0.21	3.9E5	3.9E5	020
2-(2-AMINOETHOXY)ETHANOL	AEX	D								021
AMINOETHYLETHANOLAMINE	AEE	D								022
N-AMINOETHYLPIPERAZINE	AEP	D								023
AMMONIA, ANHYDROUS	AMA	D		25	35	500	4.2	1.0E6	4.0E4	024
AMMONIUM HYDROXIDE, 28 PERCENT AQ.	AMH	D		200		500	47.0			025
N-AMYL ACETATE	AML	D		100	150	4000	0.15	5.3E3	5.3E1	026
N-AMYL ALCOHOL	AAN	D		100			0.12	3.7E3	3.7E1	027
AMYLENE		D					5.3E5			028
N-AMYL METHYL KETONE	AMK	D		50	100		3.4E3	6.8E1	029	
AMYL TALLATE		D								030
ANILINE	ANL	D	SKIN	2	5	100	1.0	7.9E2	4.0E2	031
ASBESTOS--AMOSITE				0.5	F/CC					032
ASBESTOS--CHRYSTOTILE				2	F/CC					033
ASBESTOS--CROCIDOLITE				0.2	F/CC					034
ASBESTOS--OTHER				2	F/CC					035
ASPHALT	ASP	D		5	MG/M3	10	MG/M3			036
ASPHALT BLENDING STOCKS: ROOFERS FLUX	ARF	D		5	MG/M3	10	MG/M3			037
ASPHALT BLENDING STOCKS: STRAIGHT RUN RE	ASR	D		5	MG/M3	10	MG/M3			038
BENENYL ALCOHOL		D								039
BENZENE	BNZ	D		10	25	2000	2.0	9.9E4	9.9E3	040
BENZENE HYDROCARBON MIX (> OR = 10% BEN)	BHB	D		10	25					041
BENZENE HYDROCARBON MIX (WITH ACETYLENE)	BHA	D		10	25					042
BENZENESULFONYL CHLORIDE	BSC	D					5.3E1			043
BENZENE, TOLUENE, XYLENE MIXTURE	BTX	D		10	25	2000	0.01	9.9E4	2.0E4	044
BENZYL ALCOHOL	BAL	D								045
BENZYL CHLORIDE	BCL	D		1		10	0.4	1.2E4	1.2E4	046
BERYLLIUM		D		002	MG/M3					047
BICYCLIC TERPENEL POLYAMINE AMIDE SALT		D								048
BISPHENOL A DIOLYCIDYL ETHER	BDE	D								049
BUTADIENE (1,3 BUTADIENE)	BDI	D		10	15	20000	0.4	1.0E6	1.0E3	050
BUTADIENE, BUTYLENE MIX WITH ACETYLENES	BBM	D		10	15	20000				051

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

CHEMICAL NAME	TOX CODE	CARC REF	NFPA SEC NAS	CAS	EMRSP GUIDE	BIO MED	NIOSH GUIDE	BIO MON	GUAL DT	QUAN DT	TLV DT	SEQ DT NO
ACETALDEHYDE	3		2312	75-07-0	26	X	X			DG	DG	001
ACETIC ACID	3#		2232	64-19-7	29	X	X			DG	DG	002
ACETIC ANHYDRIDE	3#		2333	108-24-7	39	X	X			DG	DG	003
ACETONE	3		1100	67-64-1	26	X		U		DG	DG	004
ACETONE CYANOHYDRIN	2		4124	75-86-5	55	X				G		005
ACETONITRILE	3		2113	75-05-8	28	X	X	U				006
ACETOPHENONE	4U		1----	98-86-2						D		007
ACETYL TRIBUTYL CITRATE	5		-----									008
ACRYLAMIDE (50% OR LESS)	3#		-013	79-06-1		X	X					009
ACRYLIC ACID	3		3332	79-10-7		X						010
ACRYLONITRILE	1	A1	4313	107-13-1		X		U		DG	DG	011
ADIPONITRILE	4C		4113	111-69-3								012
ALCOHOLS (MIXED)	5		-----						D			013
ALKENYL SUCCINIC ACID	5		-----									014
ALKENYLSUCCINIC ANHYDRIDE	5		-----									015
ALKYLBENZENESULFONIC ACIDS	4L		-----									016
N-ALKYL PHTHALATES	5		-----									017
ALKYL SUCCINATE FORMALDEHYDE HYDROXY AM	5		-----									018
ALLYL ALCOHOL	2		3323	107-18-6	28	X	X			D		019
ALLYL CHLORIDE	2		3323	107-05-1	28	X	X					020
2-(2-ARINOETHOXY)ETHANOL	5		-----	929-06-6	60					D		021
AMINOETHYLETHANOLAMINE	5		-131	111-41-1								022
N-AMINOETHYLPIPERAZINE	5		-----	140-31-8	60					D		023
AMMONIA, ANHYDROUS	2		3422	7664-41-7	15	X	X			DG	DG	024
AMMONIUM HYDROXIDE, 28 PERCENT AQ.	4C		-222	1336-21-6	60					D		025
N-AMYL ACETATE	3		1101	628-63-7	26	X	X			DG	G	026
N-AMYL ALCOHOL	4C		1102	71-41-0	26				D			027
AMYLENE	5		-----	513-35-9	26				D			028
N-AMYL METHYL KETONE	4U		-----		26							029
AMYL TALLATE	5		-----									030
ANILINE	2		3113	62-53-3	57	X	X			DG	DG	031
ASBESTOS--AMOSITE	6	A1		12172-73-5	31	X		U				032
ASBESTOS--CHRYSOTILE	6	A1		12001-29-5	31	X						033
ASBESTOS--CROCIDOLITE	6	A1		12001-28-4	31	X						034
ASBESTOS--OTHER	6	A1		1332-21-4	31							035
ASPHALT	3		0121	8052-42-4	27	X						036
ASPHALT BLENDING STOCKS: ROOFERS FLUX	3		0121		27							037
ASPHALT BLENDING STOCKS: STRAIGHT RUN RE	3		0121		27							038
BENENYL ALCOHOL	5		-----									039
BENZENE	1	A2	2113	71-43-2	27	X		U		DG	DG	040
BENZENE HYDROCARBON MIX (> OR = 10% BEN)	1	A2	-----							D	D	041
BENZENE HYDROCARBON MIX (WITH ACETYLENE)	1	A2	-----							D	D	042
BENZENSULFONYL CHLORIDE	5		-113	98-09-9	55					D		043
BENZENE, TOLUENE, XYLENE MIXTURE	1	A2	-----		27					D		044
BENZYL ALCOHOL	5		2----	100-51-6								045
BENZYL CHLORIDE	2		2442	100-44-7	59	X				DG	G	046
BERYLLIUM	6	A2		7440-41-7	32							047
BICYCLIC TERPENEL POLYAMINE AMIDE SALT	5		-----									048
BISPHENOL A DIGLYCIDYL ETHER	5		-011	167-55-43								049
BUTADIENE (1,3 BUTADIENE)	1	A2	2111	106-99-0	17	X	X			DG	DG	050
BUTADIENE, BUTYLENE MIX WITH ACETYLENES	1	A2	-----							D	D	051

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

20-DEC-83 CHEMICAL NAME	CHRIS CODE	CFR CODE	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA NO.	SEQ NO.
BUTANE	BUT	0		800			5000.0	1.0E6	1.3E3	052
N-BUTYL ACETATE	BCN	D		150	200	10000	0.4	1.1E4	7.3E1	053
SEC-BUTYL ACETATE	BTA	D		200	250	10000	200.0	2.7E4	1.4E2	054
ISO-BUTYL ACRYLATE	BAI	D		10			0.04	1.4E4	1.4E3	055
BUTYL ACRYLATE (INH) (ISO, N, AND MIXES)	BAR	0		10			0.06			056
N-BUTYL ACRYLATE	BTC	0		10			0.04	4.2E3		057
N-BUTYL ALCOHOL	BAN	D	SKIN	C50		8000	1.0	1.2E4	3.2E2	058
SEC-BUTYL ALCOHOL	BAS	D		100	150	10000	0.4	4.1E4	4.1E2	059
TERT-BUTYL ALCOHOL	BAT	D		100	150	8000	0.73	4.0E4	4.0E2	060
BUTYLAMINE (ALL ISOMERS)	BTY	0	SKIN	C5		2000	0.24	2.9E5	5.7E4	061
N-BUTYLAMINE	BAM	0	SKIN	C5			1.8	1.1E5	2.2E4	062
SEC-BUTYLAMINE	BTL	0	SKIN	C5				1.8E5	3.7E4	063
TERT-BUTYLAMINE	BUA	0	SKIN	C5				4.5E5	8.9E4	064
BUTYLBENZYL PHTHALATE	BPH	D						2.1E2		065
BUTYLENE	BTN	0						1.0E6		066
BUTYLENE GLYCOL		D						7.8E1		067
1,2-BUTYLENE OXIDE	BTO	0		400			0.7	2.7E5	6.8E2	068
BUTYLENE POLYGLYCOL		D								069
N-BUTYL ETHER	BTE	0					0.47			070
BUTYL HEPTYL KETONE		D								071
ISO-BUTYL METHACRYLATE	BMI	0					50.4	4.6E3		072
N-BUTYL METHACRYLATE	BMN	0		5						073
BUTYL METHYL KETONE		D								074
BUTYL STEARATE		D		10 (P-T)	20 (P-T)	1000	5.0	1.5E5		075
ISO-BUTYRALDEHYDE	BAD	0								076
BUTYRALDEHYDE (ISO, N, AND MIXTURES)	BAE	0								077
N-BUTYRALDEHYDE	BTR	0					0.005	1.2E5		078
GAMMA-BUTYROLACTONE	BLA	D								079
CADMIUM		D		0.05 MG/M3	0.2 MG/M3					080
CALCIUM ALKYLPHENATE	CAK	D								081
CALCIUM ALKYL SALICYLATE		D								082
CALCIUM AMINO NONYL PHENOLATE		D								083
CALCIUM CARBOXYLATE		D								084
CAMPBOR	CPO	0		2	3		0.027			085
CAMPBOR (OIL)		0		2	3	32	16.0	2.4E2	1.2E2	086
CAPROLACTAM (SOLUTION)	CLS	D		5	10			1.3E4	2.6E2	087
CARBOLIC OIL (PHENOL)	CBO	0		5	10	100	0.05	6.6E2	1.3E2	088
CARBON BLACK BASE		D		3.5 MG/M3	7.0 MG/M3					089
CARBON DISULFIDE	CBB	0	SKIN	10		500	0.1	3.9E5	3.9E4	090
CARBON MONOXIDE		0		50	400	1500				091
CARBON TETRACHLORIDE	CBT	0	SKIN	5	20	300	21.0	1.2E5	2.4E4	092
CAUSTIC POTASH SOLUTION	CPS	0	SKIN	C2 MG/M3						093
CAUSTIC SODA SOLUTION	CSS	0	SKIN	C2 MG/M3				2.2E3		094
CETYL ALCOHOL	CEM	D								095
CETYL-EICOSYL METHACRYLATE		D								096
CETYL STEARYL ALCOHOL	CWC	D	SKIN	10	3	25	0.35	1.0E6	1.0E6	097
CHEMICAL WASTES (CHLOR HCARBONS & CAUST)	CLX	0		1						098
CHLORINE	CHM	0								099
CHLOROACETIC ACID SOLUTION (80% OR LESS)	CRB	0		75		2400	0.21	1.2E4	1.6E2	100
CHLOROBENZENE		0								101
										102

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

CHEMICAL NAME	TOX CODE	CARC REF	NFPA SEC PROD	CAS	EMRSP GUIDE	BIO MED	NIOH GUIDE	BIO MON	QUAL DT	QUAN DT	TLV DT	SEQ DT NO
BUTANE	3		1000	106-97-8	22	X				DG		052
N-BUTYL ACETATE	3		1112	123-86-4	26	X	X			DG		053
SEC-BUTYL ACETATE	3		1112	105-46-4	26	X	X		D			054
ISO-BUTYL ACRYLATE	3#		-111	141-32-2	26	X				D		055
BUTYL ACRYLATE (INH) (ISO, N, AND MIXES)	3#			141-32-2	26					D		056
N-BUTYL ACRYLATE	3		2111	141-32-2	26					D		057
N-BUTYL ALCOHOL	3#		1112	71-36-3	26	X	X			DG		058
SEC-BUTYL ALCOHOL	3		-101	78-92-2	26	X	X			DG		059
TERT-BUTYL ALCOHOL	3		1101	75-65-0	26	X	X			G		060
BUTYLAMINE (ALL ISOMERS)	2		-344	109-73-9	68	X				D		061
N-BUTYLAMINE	2		2444	109-73-9	68		X			DG		062
SEC-BUTYLAMINE	2		3344	109-73-9	68					D		063
TERT-BUTYLAMINE	2			109-73-9	68					D		064
BUTYLBENZYL PHTHALATE	5		1000	117-83-9						D		065
BUTYLENE	5				22					D		066
BUTYLENE GLYCOL	5		-000	107-88-0								067
1,2-BUTYLENE OXIDE	4C		2----	106-88-7	26							068
BUTYLENE POLYGLYCOL	5											069
N-BUTYL ETHER	5		2----	142-96-1	26					D		070
BUTYL HEPTYL KETONE	5											071
ISO-BUTYL METHACRYLATE	5			97-86-9	30				D			072
N-BUTYL METHACRYLATE	5		2----	97-88-1	30							073
BUTYL METHYL KETONE	4U			591-78-6						D		074
BUTYL STEARATE	5											075
BUTYL TOLUENE (P-TERT)	3			98-51-1	27	X				D		076
ISO-BUTYRALDEHYDE	5		2212	78-84-2	26				D			077
BUTYRALDEHYDE (ISO, N, AND MIXTURES)	5			123-72-8	26				D			078
N-BUTYRALDEHYDE	5		2212	123-72-8	26				D			079
GAMMA-BUTYROLACTONE	5			96-48-0								080
CADMIUM	6			7440-43-9	53		X	U				081
CALCIUM ALKYLPHENATE	5											082
CALCIUM ALKYL SALICYLATE	5											083
CALCIUM AMINO NONYL PHENOLATE	5											084
CALCIUM CARBOXYLATE	5											085
CAMPHOR	4P											086
CAMPHOR (OIL)	3		-011	76-22-2	32	X	X					087
CAPROLACTAM (SOLUTION)	3		-004	76-22-2	27	X						088
CARBOLIC OIL (PHENOL)	4C		3233	109-60-2					D			089
CARBON BLACK BASE	3			108-95-2								090
CARBON DISULFIDE	2		2223	1333-86-4		X						091
CARBON MONOXIDE	6			75-15-0	28	X	X			DG		092
CARBON TETRACHLORIDE	1	A2	3214	630-08-0	18	X	X	B				093
CAUSTIC POTASH SOLUTION	3		3041	56-23-5	53	X				DG		094
CAUSTIC SODA SOLUTION	3		3041	1310-58-3	60							095
CETYL ALCOHOL	5			1310-73-2	60	X						096
CETYL-EICOSYL METHACRYLATE	5			36653-82-4								097
CETYL STEARYL ALCOHOL	5											098
CHEMICAL WASTES (CHLOR HCARBONS & CAUST)	4U							D				099
CHLORINE	2		3424	7782-50-5	20	X	X			DG		100
CHLOROACETIC ACID SOLUTION (80% OR LESS)	5		3444	79-11-8	60					D		101
CHLOROBENZENE	3#		2012	108-90-7	27	X	X			DG		102

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

20-DEC-85 CHEMICAL NAME	CHRIS CODE	CFR OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA PPM	SEQ NO.
CHLOROFORM	CRF	0	10	50	1000	200.0	2.1E5	2.1E4	103
CHLOROHYDRINS (CRUDE)	CHD	0	5		25	5.0	6.7E3	1.3E3	104
CHLOROPRENE	CRP	0	25		400	0.11	2.4E5	2.4E4	105
2-CHLOROPROPIONIC ACID	CLA	0	2						106
3-CHLOROPROPIONIC ACID	CLP	0							107
2- AND 3-CHLOROPROPIONIC ACID MIXTURE	CPM	0	2 (2-)						108
CHLOROSULFONIC ACID	CSA	0	1						109
CHLOROTOLUENE (O, M, P, AND MIXTURES)	CHI	0	50 (0-)	75 (0-)		0.32			110
M-CHLOROTOLUENE	CTM	0	50	75					111
O-CHLOROTOLUENE	CTO	0	50						112
P-CHLOROTOLUENE	CRN	0	0.05 MG/M3						113
CHROMIUM (VI)									114
CLEANING SPIRIT (UNLEADED)									115
CREOSOTE	CCW	0							116
M-CRESOL	CRL	0	5		250	0.2	2.0E2	4.0E1	117
O-CRESOL	CSL	0	5		250	0.2	3.3E2	6.6E1	118
P-CRESOL	CSO	0	5		250	0.001	1.4E2	2.8E1	119
CRESOLS	CRS	0	5		250	0.20	6.8E2	1.4E2	120
CRESYLATE SPENT CAUSTIC	CSC	0	5		250				121
CROTONALDEHYDE	CTA	0	2	6	400	0.2	3.9E4	2.0E4	122
CUMENE	CUM	0	50	75	8000	0.05	2.0E4	4.0E2	123
CYCLOHEXANE	CHX	0	300	375	10000	0.4	1.3E5	4.2E2	124
CYCLOHEXANOL	CHN	0	50		3500	0.05	1.3E3	2.6E1	125
CYCLOHEXANONE	CCH	0	25	100	5000	0.12	2.6E3	1.0E2	126
CYCLOHEXYLAMINE	CHA	0	10						127
CYCLOPENTADIENE POLYMERS		0	75	150	2000				128
P-CYMENE	CMP	0							129
N-DECALDEHYDE	DAL	0				2.9E2			130
DECANE	DCC	0							131
1-DECENE	DCE	0							132
DECYL ACRYLATE (ISO. N. AND MIXTURES)	DAT	0				1.3E1			133
N-DECYL ACRYLATE	DAR	0							134
N-DECYL ALCOHOL	DAN	0							135
N-DECYLBENZENE	DBZ	0							136
DETERGENT ALKYLATE		0				1.3E1			137
DIACETONE ALCOHOL	DAA	0	50	75	2100	1.1	1.3E3	2.6E1	138
DIAMMONIUM SALT OF ZINC EDTA (SOLUTION)	DSZ	0				0.48	2.6E3		139
DI-N-BUTYLAMINE	DBA	0				0.16	3.9E2		140
DIBUTYL CARBINOL		0	5 MG/M3	10 MG/M3					141
DIBUTYL PHTHALATE	DPA	0			1500				142
M-DICHLOROBENZENE	DBM	0	50		1700	0.4	1.3E3	2.6E1	143
O-DICHLOROBENZENE	DBO	0	75	110	1000	0.18			144
P-DICHLOROBENZENE	DBP	0	1000	1250	50000		1.0E6	1.0E3	145
DICHLORODIFLUOROMETHANE	DCF	0	200	250	4000		2.4E5	1.2E3	146
1,1-DICHLOROETHANE	DCH	0	5	10	250	15.0	5.3E2	1.1E2	147
2,2-DICHLOROETHYL ETHER	DEE	0							148
DICHLOROISOPROPYL ETHER	DCI	0							149
DICHLOROMETHANE (METHYLENE CHLORIDE)	DCM	0	100	500	2000	210.0	4.6E5	4.6E3	150
DICHLOROMONOFUOROMETHANE	DFM	0	10			150.0	1.0E6	1.0E5	151
2,4-DICHLOROPHENOL	DCP	0							152
1,1-DICHLOROPROPANE	DPB	0							153

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

20-DEC-85													
CHEMICAL NAME													
TOX	CARC	NFPA	SEC	CAS	EMRSP	BIO	NIOSH	BIO	QUAL	QUAN	TLV	SEC	
CODE	REF	NAS	PROD		GUIDE	MED	GUIDE	MON	DT	DT	DT	NO	
1	A2	2212		67-66-3	55	X	X		DG	DG	DG	103	
4C		3334		96-24-2								104	
4C		2323		126-99-8	30	X	X		D	D	D	105	
4N		----		598-78-7	60							106	
5		----		107-94-8	60							107	
4N		----			60							108	
2		3444	HCL	7790-94-5	39				D			109	
3		----		95-49-8	27	X						110	
5		----			27							111	
3		----		95-49-8	27							112	
4U		----		106-43-4	27							113	
6	A1	----		7440-47-3			X	U				114	
5		----										115	
5		2232		8001-58-9	27				D	D	D	116	
3		3----		1319-77-3	55	X			DG	DG	DG	117	
3		3----		1319-77-3	55	X			DG	DG	DG	118	
3		3----		1319-77-3	55	X			DG	DG	DG	119	
3		3232		1319-77-3	55	X			DG	DG	DG	120	
4U		----										121	
2		3333		123-73-9	28	X	X		D	D	D	122	
3#		0111		98-82-8	28	X	X	U	DG	DG	DG	123	
3		1112		110-82-7	26	X	X	UB	DG	DG	DG	124	
3		1121		108-93-0		X	X		DG	DG	DG	125	
3#		321		108-94-1	26	X	X		C	C	C	126	
3		2342		108-91-8	68	X	X		DG	DG	DG	127	
3		----		542-92-7		X						128	
5		2011		99-87-6	27							129	
5		----										130	
5		----		124-18-5	27							131	
5		----										132	
5		111										133	
5		----										134	
5		000		2156-96-9								135	
5		2----		112-30-1								136	
5		000										137	
3		1----		123-42-2	26	X			D	D	D	138	
5		----										139	
5		3242			68							140	
5		111		112-73-2								141	
3		000		84-74-2		X						142	
5		3----					X		D	D	D	143	
3#		2211		95-50-1	58	X	X		DG	DG	DG	144	
3		----		106-46-7	58	X	X		D	D	D	145	
3		0001		75-71-8	12	X	X					146	
3		2----		75-34-3	27	X	X		C	C	C	147	
2		323		111-44-4	57	X	X					148	
5		----		108-60-1	59							149	
3		2212		75-09-2	74	X		B	D	D	D	150	
2		----		75-43-4	12	X	X					151	
5		----		120-83-2					D	D	D	152	
5		2113		78-99-9	27				D	D	D	153	

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

CHEMICAL NAME	CHRIS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA SEG NO.
20-DEC-85									
1,2-DICHLOROPROPANE	DPP	0		75	110			5.3E4	7.1E2 154
1,3-DICHLOROPROPANE	DPC	0							155
1,3-DICHLOROPROPENE	DPU	0	SKIN	1	10		1.5	1.4E5	1.4E5 156
DICHLOROPROPENE (1,1- 1,2- 1,3- AND MIX)	DPS	0	SKIN	1	10		1.5		157
DICHLOROPROPENE, DICHLOROPROPANE MIXTURE	DMX	0	SKIN	1	10		1.5		158
2,2-DICHLOROPROPIONIC ACID	DCN	0		1					159
DICHLOROTETRAFLUOROETHANE	DTE	0		1000	1250	50000		1.0E6	1.0E3 160
DICYCLOPENTADIENE	DPT	0		5		50	0.02	2.0E3	4.0E2 161
DIETHANOLAMINE	DEA	0		3			0.27	1.0E2	3.3E1 162
DIETHYLAMINE	DEN	0		10	25	2000	0.16	2.6E5	2.7E3 163
DIETHYLBENZENE	DEB	0					1.3E3		164
DIETHYLENE GLYCOL	DEG	0		100				1.0E0	165
DIETHYLENE GLYCOL DIETHYL ETHER		0							166
DIETHYLENEGLYCOL MONOBUTYL ETHER ACETATE	DEM	0					0.2		167
DIETHYLENE GLYCOL MONOBUTYL ETHER	DME	0					0.48		168
DIETHYLENEGLYCOL MONOETHYL ETHER	DGE	0		5			1.3		169
DIETHYLENE GLYCOL MONOETHYL ETHER ACETAT	DGM	0		5			0.64		170
DIETHYLENEGLYCOL MONOMETHYL ETHER		0		5				2.6E2	171
DIETHYLENE GLYCOL MONOMETHYL ETHER ACET		0		5			0.64		172
DIETHYLENE GLYCOL MONOPHENYL ETHER		0					0.40		173
DIETHYLENETRIAMINE	DET	0	SKIN	1			10.0		174
DIETHYLETHANOLAMINE	DAE	0		10			0.27	1.3E3	1.3E2 175
DI-(2-ETHYLHEXYL)PHOSPHORIC ACID	DEP	0							176
DI(ETHYLHEXYL)PHTHALATE		0		5 MG/M3					177
DIETHYL PHTHALATE	DPH	0		5 MG/M3	10 MG/M3				178
DIETHYL SULFATE	DSU	0							179
DIHEPTYL PHTHALATE	DHP	0							180
DIHEXYL PHTHALATE		0							181
DIISOBUTYLAMINE	DBU	0							182
DIISOBUTYL CARDINOL	DBC	0					3.9E2		183
DIISOBUTYLENE	DBL	0					8.8E4		184
DIISOBUTYL KETONE	DIK	0		25		2000	0.31	1.3E3	5.2E1 185
DIISOBUTYL PHTHALATE	DIT	0							186
DIISODECYL PHTHALATE	DID	0							187
DIISONONYL PHTHALATE	DIN	0							188
DIISODCTYL PHTHALATE	DIO	0							189
DIISOPROPANOLAMINE	DIP	0							190
DIISOPROPYLAMINE	DIA	0	SKIN	5		1000	0.4	9.2E4	1.8E4 191
DIISOPROPYL BENZENE		0							192
DIMETHYLACETAMIDE	DAC	0			15				193
DIMETHYLAMINE	DMA	0	SKIN	10		2000	46.0	1.9E3	1.9E2 194
DIMETHYLAMINE SOLUTION (>45% AND <=55%)	DMG	0		10		2000	0.05	1.0E6	1.0E5 195
DIMETHYLAMINE SOLUTION (55% AND <65%)	DMY	0		10		2000			196
DIMETHYL AMMONIUM-2,4-DICHLOROPHENOXVACE	DMC	0		10		2000	4.2E5		197
N,N-DIMETHYLCYCLOHEXYLAMINE	DDA	0							198
DIMETHYLETHANOLAMINE	DXN	0						3.6E3	199
DIMETHYLFORMAMIDE	DMB	0						5.5E3	200
DIMETHYL PHTHALATE	DMF	0	SKIN	10	20	3500	2.2	3.6E3	3.6E2 201
2,2-DIMETHYLPROPANE-1,3-DIOL	DTL	0		5 MG/M3	10 MG/M3	9300	1.3E3		202
DINONYL PHTHALATE		0							203
		0							204

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

CHEMICAL NAME	TOX CODE REF	CARC REF	NFPA SEC NAS PROD	CAS	EMRSP GUIDE	BIO MED	NIOSH GUIDE	BIO MON	QUAL DT	QUAN DT	TLV DT	SEQ DT NO.
1,2-DICHLOROPROPANE	3		2113	78-87-5	27	X			DG		G	154
1,3-DICHLOROPROPANE	5		2113	142-28-9	27							155
1,3-DICHLOROPROPENE	2		-223	542-75-6	29	X						156
DICHLOROPROPENE (1,1- 1,2- 1,3- AND MIX)	2		----	542-75-6	29							157
DICHLOROPROPENE, DICHLOROPROPANE MIXTURE)	2		----	8003-19-8	29							158
2,2-DICHLOROPROPIONIC ACID	3		----	75-99-0	60	X						159
DICHLOROTETRAFLUOROETHANE	3		----	76-14-2	12	X		X				160
DICYCLOPENTADIENE	3#		-112	77-73-6	26	X			D			161
DIETHANOLAMINE	3		-222	111-42-2	26	X						162
DIETHYLAMINE	3		-312	109-89-7	68	X			DG		G	163
DIETHYLBENZENE	5		-111	25340-17-4	29	X			DG			164
DIETHYLENE GLYCOL	4C		1001	111-46-6								165
DIETHYLENE GLYCOL DIETHYL ETHER	5		----	112-36-7								166
DIETHYLENEGLYCOL MONOBUTYL ETHER ACETATE	5		-000	124-17-4								167
DIETHYLENE GLYCOL MONOBUTYL ETHER	5		1101	112-34-5								168
DIETHYLENEGLYCOL MONOETHYL ETHER	4H		-000									169
DIETHYLENE GLYCOL MONOETHYL ETHER ACETAT	4H		----	112-15-2								170
DIETHYLENEGLYCOL MONOMETHYL ETHER	4H		-000	111-77-3								171
DIETHYLENE GLYCOL MONOMETHYL ETHER ACET	4H		----	629-38-9					D			172
DIETHYLENE GLYCOL MONOPHENYL ETHER	5		----	104-68-7								173
DIETHYLENETRIAMINE	3		3222	111-40-0	29	X			DG			174
DIETHYLETHANOLAMINE	4U		3----	100-37-8								175
DI-(2-ETHYLHEXYL)PHOSPHORIC ACID	5		-023	298-07-7	60							176
DI(ETHYLHEXYL)PHTHALATE	4N		----	117-81-7								177
DIETHYL PHTHALATE	3		0----	84-66-2		X						178
DIETHYL SULFATE	5		----	64-67-5	55							179
DIHEPTYL PHTHALATE	5		----									180
DIHEXYL PHTHALATE	5		----	110-96-3	68							181
DIISOBUTYLAMINE	5		----	108-82-7								182
DIISOBUTYLCARBINDOL	5		-111									183
DIISOBUTYLENE	5		-010	12002-23-2	26							184
DIISOBUTYL KETONE	3#		1211	108-83-8	26	X						185
DIISOBUTYL PHTHALATE	5		----	84-69-5								186
DIISODECYL PHTHALATE	5		----									187
DIISONONYL PHTHALATE	5		----									188
DIISOPROPANOLAMINE	5		3222	110-97-4								190
DIISOPROPYLAMINE	2		3324	108-18-9	68	X			DG		G	191
DIISOPROPYL BENZENE	5		----	577-55-9								192
DIMETHYLACETAMIDE	3		----	127-19-5		X			DG		DG	193
DIMETHYLAMINE	2		3222	124-40-3	19	X			DG		G	194
DIMETHYLAMINE SOLUTION (45% OR LESS)	2		----	124-40-3	26				D			195
DIMETHYLAMINE SOLUTION (>45% AND <=55%)	2		----	124-40-3	26							196
DIMETHYLAMINE SOLUTION (55% AND <65%)	2		----	124-40-3	26							197
DIMETHYL AMMONIUM-2,4-DICHLOROPHENOXYACE	5		----	2008-39-1								198
N,N-DIMETHYLCYCLOHEXYLAMINE	5		----	98-94-2	60							199
DIMETHYLETHANOLAMINE	5		----	108-01-0	29				D			200
DIMETHYLFORMAMIDE	3		-223	68-12-2	26	X		UB	DG		G	201
DIMETHYL PHTHALATE	3		----	131-11-3		X						202
2,2-DIMETHYLPROPANE-1,3-DIOL	5		----	126-30-7					D			203
DINONYL PHTHALATE	5		----	84-76-4								204



TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

CHEMICAL NAME	CHRS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA	SEQ NO
DI(OCYLPHENYL)AMINE	DOP	D								205
DIOCTYL PHTHALATE	DOX	D	SKIN	5 MG/M3			1.3E1			206
1,4-DIOXANE	DPN	D		25	100	200	1.8 3.6E4	1.4E3		207
DIPENTENE	DIL	D								208
DIPHENYL	DDO	D		0.2	0.6	50	1.0	6.6E1		209
DIPHENYL DIPHENYL OXIDE	DPE	D		0.5						210
DIPHENYL ETHER	DPM	D		1		20	2.6E1			211
DIPHENYLMETHANE DIISOCYANATE	DNA	D		CO. 02			3.9E4	6.6E1		212
DI-N-PROPYLAMINE	DPG	D								213
DIPROPYLENE GLYCOL	DDG	D								214
DIPROPYLENE GLYCOL MONOMETHYL ETHER	DDF	D		100	150		3.9E2	1.7E2		215
DISTILLATES: FLASHED FEED STOCKS	DSR	D								216
DISTILLATES: STRAIGHT RUN	DUP	D								217
DIUNDECYL PHTHALATE	DDN	D					3.9E2			218
DODECANE	DDC	D					1.3E3			219
DODECANOL	DDC	D								220
DODECENE	DDC	D								221
1-DODECENE	DDC	D								222
DODECYLBENZENE	DDB	D					1.3E1			223
DODECYL DIPHENYL OXIDE DISULFONATE SOLN	DDS	D								224
DODECYLMETHACRYLATE	DDM	D								225
DODECYL PENTADECYL METHACRYLATE	DDP	D								226
DODECYL PHENOL	DDP	D								227
EPICHLOROHYDRIN	EPC	D	SKIN	2	5	100	0.93 1.6E4	8.0E3		228
EPOXYLATED LINEAR ALCOHOLS, C11-C15	ETH	D								229
ETHANE	EGE	D					1500			230
2-ETHOXYETHANOL	EOD	D	SKIN	5		6000	0.6 5.0E3	1.1E3		231
ETHOXYLATED DODECANOL	EOP	D		5		2500	0.14 5.0E3	3.2E2		232
ETHOXYLATED PENTADECANOL	EOT	D								233
ETHOXYLATED TETRADECANOL	ETD	D								234
ETHOXYLATED TRIDECANOL	ETD	D								235
ETHOXYLATED UNDECANOL	ETG	D								236
ETHOXY TRIGLYCOL	ETA	D					1.3E1			237
ETHYL ACETATE	EAC	D	SKIN	400		10000	13.2 1.3E5	3.3E2		238
ETHYL ACRYLATE	EAL	D		5	25	2000	0.0001 3.9E4	7.8E3		239
ETHYL ALCOHOL	EAM	D		1000			4.67 5.8E4	5.8E1		240
ETHYLAMINE (40% OR LESS)	EAN	D		10		4000	0.83 1.0E6	1.0E5		241
ETHYLAMINE (72% OR LESS)	EAN	D		10		4000	0.83			242
ETHYL AMYL KETONE	EAN	D		10		4000	0.83			243
ETHYLBENZENE	ETB	D		25		3000	5.0 2.6E3	1.0E2		244
ETHYL BUTANOL	EBT	D		100	125	2000	140 0.2 0E4	2.0E2		245
N-ETHYL-N-BUTYLAMINE	EBA	D		100		1500	0.8 1.2E3			246
ETHYL CHLORIDE	ECY	D								247
ETHYL CYCLOHEXANE	ECC	D								248
N-ETHYL CYCLOHEXYLAMINE	ETL	D								249
ETHYLENE	ECH	D	SKIN	1000	1250	20000	1.0E6	1.0E3		250
ETHYLENE CARBONATE	ETC	D		370 MG/M3						251
ETHYLENE CHLOROHYDRIN	ETC	D								252
ETHYLENE CYANOHYDRIN	ETC	D					400			253
		D		C1		10	0.93 8.9E3	8.9E3		254
		D								255

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

20-DEC-85 CHEMICAL NAME	TOX CODE	CARC REF	NFA SEC	CAS	EMRSP GUIDE	BIO MED	NIOSH GUIDE	BIO MON	QUAL DT	QUAN DT	TLV DT	SEQ NO.
DI(OCTYLPHENYL)AMINE	5											205
DIOCTYL PHTHALATE	4N			117-84-0								206
1,4-DIOXANE	2			123-91-1	26	X	X			DG		207
DIPENTENE	5		0110	138-86-3	27				D			208
DIPHENYL	3			92-52-4		X	X					209
DIPHENYL DIPHENYL OXIDE	4N			8004-13-5								210
DIPHENYL ETHER	4N		1	101-84-8								211
DIPHENYL METHANE DIISOCYANATE	2		-324	101-68-8		X						212
DI-N-PROPYLAMINE	5		3	142-84-7	68							213
DIPROPYLENE GLYCOL	5		-001	110-98-5		X	X		D			214
DIPROPYLENE GLYCOL MONOMETHYL ETHER	3			34590-94-8					D			215
DISTILLATES: FLASHED FEED STOCKS	5		-112									216
DISTILLATES: STRAIGHT RUN	5		-112									217
DIUNDECYL PHTHALATE	5											218
DODECANE	5			112-40-3								219
DODECANOL	5			112-53-8								220
DODECENE	5		0111	6842-15-5								221
1-DODECENE	5			6842-15-5								222
DODECYLBENZENE	5		-000	25265-78-5								223
DODECYL DIPHENYL OXIDE DISULFONATE SOLN	5			142-90-5								224
DODECYLMETHACRYLATE	5											225
DODECYL PENTADECYL METHACRYLATE	5											226
DODECYL PHENOL	5											227
EPOCHLOROHYDRIN	2		3334	27193-86-8	30	X	X			D	G	228
EPOXYLATED LINEAR ALCOHOLS, C11-C15	5			106-89-8								229
ETHANE	3			74-84-0	22	X	X		D			230
2-ETHOXYETHANOL	3#		-112	110-80-5	26	X	X		D			231
2-ETHOXYETHYL ACETATE	3#		-112	111-15-9	26	X	X					232
ETHOXYLATED DODECANOL	5											233
ETHOXYLATED PENTADECANOL	5											234
ETHOXYLATED TETRADECANOL	5											235
ETHOXYLATED TRIDECANOL	5											236
ETHOXYLATED UNDECANOL	5											237
ETHOXY TRIOLYCOL	5		-000	112-50-5								238
ETHYL ACETATE	3		1112	141-78-6	26	X	X			DG	DG	239
ETHYL ACRYLATE	3#		2323	140-88-5	27	X	X			DG	DG	240
ETHYL ALCOHOL	3		0101	64-17-5	26	X				DG	DG	241
ETHYLAMINE	2		3323	75-04-7	68	X	X			DG	G	242
ETHYLAMINE (40% OR LESS)	2			75-04-7	29	X						243
ETHYLAMINE (72% OR LESS)	2			75-04-7	29	X				D		244
ETHYL AMYL KETONE	3			541-85-5	26	X						245
ETHYLBENZENE	3		2222	100-41-4	26	X		U		DG	DG	246
ETHYL BUTANOL	4C		1	97-95-0	26					D		247
N-ETHYL-N-BUTYLAMINE	5			617-79-8								248
ETHYL CHLORIDE	3		2111	75-00-3	27	X				G	G	249
ETHYL CYCLOHEXANE	5			1678-91-7								250
N-ETHYL CYCLOHEXYLAMINE	4L			5459-93-8						DG		251
ETHYLENE	3		1001	74-85-1	22	X						252
ETHYLENE CARBONATE	5			96-49-1								253
ETHYLENE CHLOROHYDRIN	3#		3	107-07-3	55	X	X					254
ETHYLENE CYANOHYDRIN	5		2002	109-78-4								255

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

CHEMICAL NAME	CHRIS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA NO.	SEQ NO.
ETHYLENEDIAMINE	EDA	0		10		2000	3.4	1.4E4	1.4E3	256
ETHYLENE DIBROMIDE	EDB	0	SKIN			400	26.0	1.2E4		257
ETHYLENE DICHLORIDE	EDC	0		10	15	1000	40.0	1.3E5	1.3E4	258
ETHYLENE GLYCOL	EGC	0		C50			25.0	6.6E1	1.3E0	259
ETHYLENE GLYCOL DIACETATE	EGD	0								260
ETHYLENE GLYCOL METHYL BUTYL ETHER	EGM	0								261
ETHYLENE GLYCOL MONOBUTYL ETHER	EMA	0	SKIN	25		700	0.48	1.0E3		262
ETHYLENE GLYCOL MONOBUTYL ETHER ACETATE	EMA	0					0.25			263
ETHYLENE GLYCOL MONOETHYL ETHER ACETATE	EGA	0	SKIN	5		2500	0.20	1.6E3		264
ETHYLENE GLYCOL MONOISOPROPYL ETHER	EME	0		25						265
ETHYLENE GLYCOL MONOMETHYL ETHER	EME	0	SKIN	5			0.4	8.2E3		266
ETHYLENE GLYCOL MONOMETHYL ETHER ACETATE	EME	0		5	35	2500	0.66	9.2E3	3.7E2	267
ETHYLENE GLYCOL PHENYL ETHER	EME	0								268
ETHYLENE OXIDE	EOX	0		1		800	500.0	1.0E6	1.0E5	269
ETHYLENE OXIDE, PROPYLENE OXIDE MIXTURE	EPH	0		1		1400	500.0			270
ETHYLENE - PROPYLENE COPOLYMERS	EPH	0								271
ETHYL ETHER	EET	0		400	500	19000	0.33	5.8E5	1.5E3	272
ETHYLHEXALDEHYDE	EHA	0								273
ETHYLHEXANOIC ACID (ETHYL HEXOIC ACID)	EHA	0								274
2-ETHYL HEXANOL	EHX	0					0.14	4.7E2		275
2-ETHYLHEXYL ACRYLATE	EAI	0					0.18	1.3E2		276
2-ETHYL HEXYLAMINE	EHM	0								277
ETHYL HEXYL PHTHALATE	EHT	0								278
ETHYLHEXYL TALLATE	EHT	0								279
ETHYLIDENE NORBORNENE	ENB	0		C5			0.07	6.0E3	1.2E3	280
ETHYL METHACRYLATE	ETM	0						2.0E4		281
2-ETHYL-3-PROPYLACROLEIN	EPA	0						6.6E2		282
ETHYL TOLUENE	ETE	0								283
FATTY ACID AMIDES	FCS	0								284
FERRIC CHLORIDE SOLUTIONS	FCS	0		1 MG/M3					1.7E3	285
FLUORIDES	FMS	0		2.5 MG/M3		500 MG/M3				286
FORMALDEHYDE SOLUTION	FAM	0		1	2	100	0.8	1.7E3		287
FORMAMIDE	FMA	0		20	30			1.3E2	6.5E0	288
FORMIC ACID	FMA	0		5		100	21.0	7.9E2		289
FURFURAL	FFA	0	SKIN	2	10	250	0.25	2.0E3	1.0E3	290
FURFURYL ALCOHOL	FAL	0	SKIN	10	15	250	8.0	1.3E3	1.3E2	291
GAS OIL CRACKED	GOC	0								292
GASOLINE AUTOMOTIVE (4.23G PB/GAL)	GAT	0		300	500	10000	0.25	2.5E5	8.3E2	293
GASOLINE AVIATION (4.86G PB/GAL)	GAV	0		300	500	10000	0.25			294
GASOLINE BLENDING STOCKS: ALKYLATES	GAK	0		300	500	10000	0.3			295
GASOLINE BLENDING STOCKS: REFORMATES	GRF	0		300	500	10000	0.4			296
GASOLINE BLENDING STOCKS: REFORMATES	GCS	0		300	500	10000				297
GASOLINE CASINGHEAD	GCL	0		300	500	10000				298
GASOLINE POLYMER	GSL	0		300	500	10000				299
GASOLINE STRAIGHT RUN	GSR	0		300	500	10000	0.25			300
GLUTARALDEHYDE (50% OR LESS)	GTA	0		C0.2			0.04	2.2E4	1.1E5	301
GLYCERINE	GCR	0		10 MG/M3						302
GLYCERYL TRIACETATE	GCR	0								303
GLYCIDYL ESTER OF TERTIARY CARBOXYLIC AC	GCR	0								304
GLYCIDYL ESTER OF VERSATIC ACID	GCR	0								305
GLYCOLS, RESINS, AND SOLVENTS MIXTURE	GCR	0								306
GLYCOL TRIACETATE	GCR	0								306

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

20-DEC-85	CHEMICAL NAME	TOX CODE	CARC REF	NFPA SEC	CAS	EMRSP BIO GUIDE	BIO MED	NIOSH GUIDE	BIO MON	QUAL DT	QUAN DT	TLV DT	SEQ NO
	ETHYLENEDIAMINE	3		3333	107-15-3	29	X			DG		G	256
	ETHYLENE DIBROMIDE	1	A2	3113	106-93-4	55	X	X		DG		DG	257
	ETHYLENE DICHLORIDE	2		2223	107-06-2	26	X			DG		DG	258
	ETHYLENE GLYCOL	3		1001	107-21-1		X			G		G	259
	ETHYLENE GLYCOL DIACETATE	5		1000	111-55-7								260
	ETHYLENE GLYCOL METHYL BUTYL ETHER	5		-----									261
	ETHYLENE GLYCOL MONOBUTYL ETHER	3		2112	111-76-2	26				DG		DG	262
	ETHYLENE GLYCOL MONOBUTYL ETHER ACETATE	5		-----	112-07-2					D		D	263
	ETHYLENE GLYCOL MONOETHYL ETHER ACETATE	3		-111	111-15-9	26				D		D	264
	ETHYLENE GLYCOL MONOISOPROPYL ETHER	4N		-----	109-59-1								265
	ETHYLENE GLYCOL MONOMETHYL ETHER	3		-112	109-86-4	26				DG		DG	266
	ETHYLENE GLYCOL MONOMETHYL ETHER ACETATE	3		-----	110-49-6	26				DG		DG	267
	ETHYLENE GLYCOL PHENYL ETHER	5		-----	112-99-6								268
	ETHYLENE OXIDE	1	A2	2332	75-21-8	69	X			DG		G	269
	ETHYLENE OXIDE, PROPYLENE OXIDE MIXTURE	1	A2	-----		26				D			270
	ETHYLENE - PROPYLENE COPOLYMERS	5		-----						DG		DG	271
	ETHYL ETHER	3		2102	60-29-7	26	X						272
	ETHYLHEXALDEHYDE	5		2121	123-05-7	26						G	273
	ETHYLHEXANOIC ACID (ETHYL HEXOIC ACID)	5		-----	149-57-5								274
	2-ETHYL HEXANOL	5		2111	104-76-7								275
	2-ETHYLHEXYL ACRYLATE	5		2011	103-11-7								276
	2-ETHYL HEXYLAMINE	5		-----	104-75-6	29							277
	ETHYL HEXYL PHTHALATE	5		-----	117-81-7								278
	ETHYLHEXYL TALLATE	5		-----									279
	ETHYLIDENE NORBORNENE	3#		-314	16219-75-3								280
	ETHYL METHACRYLATE	5		2----	97-63-2	30							281
	2-ETHYL-3-PROPYLACROLEIN	5		-323	645-62-5								282
	ETHYL TOLUENE	5		-----	611-14-3								283
	FATTY ACID AMIDES	5		-----	622-96-8								284
	FERRIC CHLORIDE SOLUTIONS	4N		-----	7705-08-0	31							285
	FLUORIDES	6		-----				X	U				286
	FORMALDEHYDE SOLUTION	1	A2	2323	50-00-0	29	X			DG		DG	287
	FORMAMIDE	3		-----	75-12-7		X						288
	FORMIC ACID	3		3333	64-18-6	60	X	X		DG		DG	289
	FURFURAL	3#		2223	98-01-1	29	X	X	U	G		G	290
	FURFURYL ALCOHOL	3		1212	98-00-0	55	X						291
	GAS OIL: CRACKED	5		1112		27							292
	GASOLINE: AUTOMOTIVE (4.23G PB/GAL)	3#		1112	8006-61-9	27	X			DG		G	293
	GASOLINE: AVIATION (4.86G PB/GAL)	3#		1112		27							294
	GASOLINE BLENDING STOCKS: ALKYLATES	3#		1112		27							295
	GASOLINE BLENDING STOCKS: REFORMATES	3#		1112		27							296
	GASOLINE: CASINOHEAD	3#		1101		27				D			297
	GASOLINE: POLYMER	3#		1112		27							298
	GASOLINE: STRAIGHT RUN	3#		1112		27				D			299
	GLUTARALDEHYDE (50% OR LESS)	2		-----	111-30-8		X						300
	GLYCERINE	4N		1000	56-81-9		X			D			301
	GLYCERYL TRIACETATE	5		-----	102-76-1								302
	GLYCIDYL ESTER OF TERTIARY CARBOXYLIC AC	5		-----									303
	GLYCIDYL ESTER OF VERSATIC ACID	5		-----									304
	GLYCOLS, RESINS, AND SOLVENTS MIXTURE	5		-----									305
	GLYCOL TRIACETATE	5		-----						D			306

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

20-DEC-85 CHEMICAL NAME	CHRS CODE	CFR CODE	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA PPM	SEG NO.
GLYOXAL, 40% SOLUTION	GDS	D								307
GREASE	D	D								308
HEPTADECANE	HPT	D		400	500	4250	223.0	1.5E4	3.8E1	309
HEPTANE	HEP	D								310
HEPTANOIC ACID	HTN	D								311
HEPTANOL	HTE	D								312
1-HEPTENE	D	D								313
HERBICIDE (C15-H22-NO2-CL)	D	D								314
HEXAETHYLENE GLYCOL	HMD	D								315
HEXAMETHYLENEDIAMINE	HMC	D								316
HEXAMETHYLENEDIAMINE SOLUTION	D	D								317
HEXAMETHYLENE GLYCOL	HMI	D								318
HEXAMETHYLENEIMINE	HXA	D		50		5000	30.0	6.6E3	2.4E3	319
HEXANE	HXE	D								320
1-HEXENE	HXE	D								321
HEXYL ACETATE	HXE	D		50	300	4000		5.3E3	1.3E3	322
HEXYLENE GLYCOL	HYG	D		C25	C125			6.6E1	2.6E0	323
HOG GREASE	D	D								324
HYDROCHLORIC ACID	HCL	D		C5		100	1.0	2.8E5		325
HYDROCHLORIC ACID, SPENT (15% OR LESS)	HCS	D								326
HYDROFLUORIC ACID	HFA	D		3	6	100	0.04			327
HYDROGEN CHLORIDE	HDC	D		C5		100	1.0	1.0E6	2.0E5	328
HYDROGEN FLUORIDE	HFX	D		3	6	20	0.04	1.0E6	3.3E5	329
HYDROGEN SULFIDE	D	D		10.0	15	300	0.7			330
2-HYDROXYETHYL ACRYLATE	HAI	D								331
INDUSTRIAL WASTES (METHYL MERCAPTAN, ETC)	INW	D		0.5 (M-M)						332
ISOAMYL ACETATE	IAT	D		100	125	3000	0.03	5.3E3	5.3E1	333
ISOBUTYL ACETATE	IBA	D		150	187	7500	6.0	1.7E4	1.1E2	334
ISOBUTYL ALCOHOL	IAB	D		50	75	8000	1.8	1.2E4	2.4E2	335
ISOBUTYLAMINE	IAM	D						1.3E5		336
ISODECALDEHYDE	IDA	D						2.9E2		337
ISODECYL ACRYLATE	IAI	D						1.3E1		338
ISODECYL ALCOHOL	ISA	D								339
ISOHEXANE	IHA	D						1.3E5		340
ISOCTALDEHYDE	IOC	D								341
ISOPHORONE	IPH	D								342
ISOPHORONE DIAMINE	IPI	D								343
ISOPHORONE DIISOCYANATE	IPD	D	SKIN	C5		800	0.54	3.9E2	7.8E1	344
ISOPRENE	IPR	D		CO. 01						345
ISOPROPYL ACETATE	IAC	D		1000				5.3E5		346
ISOPROPYL ALCOHOL	IPA	D		250	310	16000	0.97	5.7E4	2.3E2	347
ISOPROPYLAMINE	IPP	D		400	500	20000	22.5	4.3E4	1.1E2	348
ISOPROPYLAMINE (90% OR LESS)	IPO	D		5	10	4000	0.7	6.1E5	1.2E5	349
ISOPROPYL ETHER	IPE	D		5	10	4000	0.7			350
ISOVALERALDEHYDE	IWA	D		250	310	10000	0.53	1.7E5	6.8E2	351
JET FUEL: JP-1 (KEROSENE)	JPD	D		100 MG/M3						352
JET FUEL: JP-3	JPT	D					1.0			353
JET FUEL: JP-4	JPF	D					0.25			354
JET FUEL: JP-5 (KEROSENE, HEAVY)	JPV	D					1.0			355
KEROSENE	KRS	D		100 MG/M3			1.0	2.7E3		356
										357

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

20-DEC-85 CHEMICAL NAME	TOX CODE	CARC REF	CAS	EMRSP GUIDE	BIO MED	NIOSH GUIDE	BIO MON	QUAL DT	QUAN DT	TLV DT	SEQ NO.
GLYOXAL, 40% SOLUTION	5	-111	107-22-2								307
GREASE	5	---									308
HEPTADECANE	5	---									309
HEPTANE	3	-011	142-82-5	27	X	X		DG		G	310
HEPTANOIC ACID	5	---	111-14-8								311
HEPTANOL	5	---	111-70-6						D		312
1-HEPTENE	5	-110		27							313
HERBICIDE (C15-H22-NO2-CL)	5	---									314
HEXAETHYLENE GLYCOL	5	---	2615-15-8								315
HEXAMETHYLENEDIAMINE	5	-123	124-09-4	60							316
HEXAMETHYLENEDIAMINE SOLUTION	5	---		60							317
HEXAMETHYLENE GLYCOL	5	---	629-11-8	29							318
HEXAMETHYLENEIMINE	5	---	111-49-9								319
HEXANE	3#	1001	110-54-3	27	X	X	UB	DG		G	320
HEXANOL	5	---	111-27-3	26					D		321
1-HEXENE	5	---		27							322
HEXYL ACETATE	4N	1211	142-92-7		X	X					323
HEXYLENE GLYCOL	3	3344	107-41-5		X						324
HOG GREASE	5	---									325
HYDROCHLORIC ACID	2	3332	7647-01-0	15				DG		D	326
HYDROCHLORIC ACID, SPENT (15% OR LESS)	3	---		60				DG			327
HYDROFLUORIC ACID	2	4444	7664-39-3	15					G		328
HYDROGEN CHLORIDE	2	3433	7647-01-0	15	X	X		DG		DG	329
HYDROGEN FLUORIDE	2	4444	7664-39-3	15	X	X		DG		DG	330
HYDROGEN SULFIDE	6	---	7783-06-4	13	X	X					331
2-HYDROXYETHYL ACRYLATE	5	-444	818-61-1								332
INDUSTRIAL WASTES (METHYL MERCAPTAN, ETC)	3	---									333
ISODAMYL ACETATE	3	1---	123-92-2		X	X			D		334
ISOBUTYL ACETATE	3	1112	110-19-0	26	X	X		DG		G	335
ISOBUTYL ALCOHOL	3	1101	78-83-1	26	X	X		DG			336
ISOBUTYLAMINE	5	2344	78-81-9	68					D		337
ISODECALDEHYDE	5	-111	3085-26-5								338
ISODECYL ACRYLATE	5	---	1330-61-6								339
ISODECYL ALCOHOL	5	-020	25339-17-7								340
ISOHEXANE	5	-001	107-83-5						D		341
ISOCTALDEHYDE	5	-101									342
ISOPHORONE	3#	2222	78-59-1		X						343
ISOPHORONE DIAMINE	5	---		60							344
ISOPHORONE DIISOCYANATE	3#	---	4098-71-9	55	X						345
ISOPRENE	4L	2111	78-79-5	27							346
ISOPROPYL ACETATE	3	1112	108-21-4	26	X	X		DG		DG	347
ISOPROPYL ALCOHOL	3	1102	67-63-0	26	X	X		DG		DG	348
ISOPROPYLAMINE	2	3324	75-31-0	68	X	X		DG		G	349
ISOPROPYLAMINE (90% OR LESS)	2	---	75-31-0	68	X	X			D		350
ISOPROPYL ETHER	3	2111	108-20-3	26	X				D		351
ISOVALERALDEHYDE	5	---	590-86-3								352
JET FUEL: JP-1 (KEROSENE)	4N	0111	8008-20-6	27					D		353
JET FUEL: JP-3	5	0111		27							354
JET FUEL: JP-4	5	0111		27					D		355
JET FUEL: JP-5 (KEROSENE, HEAVY)	5	0111		27					D		356
KEROSENE	4N	0111	8008-20-6	27					DG		357

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

CHEMICAL NAME	CHRS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA NO.	SEQ NO.
LACTIC ACID	LTA	D								358
LARD	LLS	D								359
LATEX, LIQUID SYNTHETIC	LLS	D								360
LEAD DUST				0.15 MG/M3						361
LEAD FUMES				0.15 MG/M3						362
LIGIFIED NATURAL GAS (OR LPG)	LNG	D								363
MAGNESIUM NONYL PHENOL SULFIDE		D								364
MAGNESIUM SULFONATE		D								365
MALEIC ANHYDRIDE	MLA	D								366
MALEIC ANHYDRIDE COPOLYMER		D		0.25			0.4	0.1E0	0.3E0	367
MANGANESE (FUME)				1.0 MG/M3	3 MG/M3					368
2-MERCAPTOBENZOTHIADIAZOLE (SOLUTIONS)	MBT	D								369
MERCURY		D		0.05 MG/M3		28 MG/M3				370
MESITYL OXIDE	MSO	D		15	25	5000	0.05	1.1E4	7.3E2	371
METHACRYLIC ACID	MAD	D		20			5.0	1.3E3	6.5E1	372
METHANE	MTH	D								373
METHOXYTRIGLYCOL	MTG	D								374
METHYL ACETATE	MTT	D		200	250	10000	4.6	2.2E5	1.1E3	375
METHYL ACETOACETATE		D								376
METHYL ACETYLENE, PROPADIENE MIXTURE	MAP	D		1000	1250	20000	100.0	1.0E6	1.0E3	377
METHYLACRYLATE	MAM	D	SKIN	10		1000	0.005	9.0E4	9.0E3	378
METHYL ALCOHOL	MAL	D	SKIN	200	250	25000	53.3	1.3E5	6.5E2	379
METHYLAMINE SOLUTION (42% OR LESS)	MSZ	D		10		100	0.02	1.0E6	1.0E5	380
METHYL AMYL ACETATE	MAC	D		50			0.04	4.7E3		381
METHYL AMYL ALCOHOL (METHYLISOBUTYL CARB.)	MAA	D	SKIN	25	40	2000				382
METHYL BROMIDE	MTB	D	SKIN	5	15	2000	0.23	1.0E6	2.0E5	383
METHYL BUTANOL (ISOMYL ALCOHOL)		D		100	125	8000	1.0			384
METHYL-T-BUTYL ETHER	MBE	D								385
METHYL CHLORIDE	MTC	D		50	100	1000		1.0E6	2.0E4	386
2-METHYL-6-ETHYL ANILINE	MEN	D	SKIN	260						387
METHYL ETHYL KETONE (2-BUTANONE)	MEK	D		200	300	3000	4.68	1.3E5	6.5E2	388
2-METHYL-9-ETHYLPYRIDINE	MEP	D						1.2E3		389
METHYL FORMAL	MTF	D								390
METHYL FORMATE	MFH	D		100	150	5000	2000.0	5.3E5	5.3E3	391
METHYL HEPTYL KETONE (ETHYL AMYL HEPTANO)	MHK	D		25		3000	5.0			392
2-METHYL-2-HYDROXY-3-BUTYNE	MHB	D								393
METHYL ISOBUTYL CARBINOL	MIC	D		25	40	2000	0.03	5.0E3	2.0E2	394
METHYL ISOBUTYL KETONE (HEXONE)	MIK	D	SKIN	50	75	3000	0.5	1.3E4	2.6E2	395
METHYL METHACRYLATE	MMH	D		100	125	4000	0.2	4.6E4	4.6E2	396
METHYL NAPHTHALENE	MNA	D								397
2-METHYL PENTENE	MPN	D								398
2-METHYLPYRIDINE	MPR	D								399
1-METHYLPYRROLIDONE	MPY	D								400
ALPHA-METHYLSTYRENE	MNS	D		50	100			5.4E3	1.1E2	401
MINERAL SPIRITS	MCF	D		1000	1250	5000		3.4E4		402
MONOCHLORODIFLUOROMETHANE	MTE	D				20000				403
MONOCHLOROTETRAFLUOROETHANE	MTE	D								404
MONOCHLOROTRIFLUOROMETHANE	MCM	D								405
MONOETHANOLAMINE (ETHANOLAMINE)	MEA	D		3	6	1000	4.0	5.3E2		406
MONOISOPROPANOLAMINE	MPL	D	SKIN	20	30	8000	0.07	9.2E3	4.6E2	407
MORPHOLINE		D								408

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

20-DEC-85 CHEMICAL NAME	TOX CODE	CARC REF	NFPA SEC	CAS	EMRSP GUIDE	BIO MED	NIOSH GUIDE	BIO MON	QUAL DT	QUAN DT	TLV DT	SEG NO.
LACTIC ACID	5		----	50-21-5								358
LARD	5		----									359
LATEX, LIQUID SYNTHETIC	5		----	9016-00-6								360
LEAD DUST	6		----	7439-92-1				U				361
LEAD FUMES	6		----	7439-92-1				U				362
LIGUIFIED NATURAL GAS (OR LPG)	5		-000		22					D		363
MAGNESIUM NONYL PHENOL SULFIDE	5		----									364
MAGNESIUM SULFONATE	5		----									365
MALEIC ANHYDRIDE	3		3221	108-31-6	60	X	X					366
MALEIC ANHYDRIDE COPOLYMER	5		----									367
MANGANESE (FUME)	6		----	7439-96-5				X				368
2-MERCAPTOBENZOTHIADIAZOLE (SOLUTIONS)	5		----	2492-26-4								369
MERCURY	6		----	7439-97-6	60		X	U				370
MESITYL OXIDE	3		3222	141-79-7	26	X				D		371
METHACRYLIC ACID	3		----	79-41-4	60	X				D		372
METHANE	3		-000	74-82-8	22	X				D		373
METHOXYTRIGLYCOL	5		----									374
METHYL ACETATE	3		1201	79-20-9		X	X			D		375
METHYL ACETOACETATE	5		----	105-45-3								376
METHYL ACETYLENE, PROPADIENE MIXTURE	3		----									377
METHYLACRYLATE	3#		2323	96-33-3	17	X	X			D		378
METHYL ALCOHOL	3#		1112	67-56-1	28	X	X	U		D		379
METHYLAMINE SOLUTION (42% OR LESS)	2		----	74-89-5	68	X						380
METHYL AMYL ACETATE	4N		1211	108-84-9	26							381
METHYL AMYL ALCOHOL (METHYLISOBUTYL CARB.)	3		2212	108-11-2	26							382
METHYL BROMIDE	2		----	74-83-9	55	X	X			D		383
METHYL BUTANOL (ISOMYL ALCOHOL)	3		----	123-51-3		X	X					384
METHYL-T-BUTYL ETHER	5		----		26							385
METHYL CHLORIDE	2		2002	74-87-3	18	X	X			D		386
2-METHYL-6-ETHYL ANILINE	4L		----	24549-06-2								387
METHYL ETHYL KETONE (2-BUTANONE)	3#		1112	78-93-3	26	X		U		D		388
2-METHYL-5-ETHYLPYRIDINE	5		2222	104-90-5	60							389
METHYL FORMAL	5		2111									390
METHYL FORMATE	3		2311	107-31-3	26	X	X					391
METHYL HEPTYL KETONE (ETHYL AMYL HEPTANO)	4H		----	821-55-6								392
2-METHYL-2-HYDROXY-3-BUTYNE	5		2----									393
METHYL ISOBUTYL CARBINOL	3#		2212	108-11-2	26	X	X					394
METHYL ISOBUTYL KETONE (HEXONE)	3#		2111	108-10-1	26	X				D		395
METHYL METHACRYLATE	3		2323	80-62-6	27	X	X			D		396
METHYL NAPHTHALENE	5		----	1321-94-4								397
2-METHYL PENTENE	5		----	763-29-1								398
2-METHYLPYRIDINE	5		2221	109-06-8								399
1-METHYLPYRROLIDONE	5		2----	872-50-4								400
ALPHA-METHYLSTYRENE	3		1----	98-83-9		X						401
MINERAL SPIRITS	4H		0----	8030-30-6								402
MONOCHLORODIFLUOROMETHANE	4N		-001	75-45-6	12					D		403
MONOCHLOROTETRAFLUOROETHANE	5		----	63938-10-3						D		404
MONOCHLOROTRIFLUOROMETHANE	5		----	75-72-9								405
MONOETHANOLAMINE (ETHANOLAMINE)	3		2222	141-43-5	60							406
MONOISOPROPANOLAMINE	5		-121	78-96-6								407
MORPHOLINE	3		2111	110-91-8	29	X	X			D		408



TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

CHEMICAL NAME	CHRS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA	SEG NO
MOTOR FUEL ANTIKNOCK CMPS (PB ALKYL)	MFA	D	SKIN	0.10 MG/M3		40	0.2 6.6E3			409
NAPHTHA: AROMATIC (10% OR LESS BENZENE)	NCT	D		100			5.0			410
NAPHTHA: COAL TAR	NCT	D		300		10000	5.0 3.9E3			411
NAPHTHA: CRACKING FRACTION	NCT	D		100						412
NAPHTHA: HEAVY	NCT	D		100						413
NAPHTHALENE	NTM	D		10	15	500	0.03 1.3E3	1.3E2		414
NAPHTHA: PARAFFINIC	NTM	D		100						415
NAPHTHA: PETROLEUM	NTM	D		100		10000				416
NAPHTHA: SOLVENT	NTM	D		100		5000				417
NAPHTHA: STODDARD SOLVENT	NTM	D		100	200	5000	3.9E3			418
NAPHTHA: VM & P (75% NAPHTHA)	NVM	D		300	400	5000	100.0 3.9E3			419
NAPHTHENIC ACID	NTI	D		1.0 MG/M3						420
NICKEL	NAC	D		2	4	100	4.3E4	2.2E4		421
NITRIC ACID	NCD	D		2	4	100	4.3E4	2.2E4		422
NITRIC ACID (70% OR LESS)	NCD	D		2	4	100	4.3E4	2.2E4		423
NITROBENZENE	NTB	D	SKIN	1	2	200	0.0 2.6E2	2.6E2		424
NITROGEN, LIQUIFIED	NXX	D		3	5	25	5.0			425
NITROGEN OXIDES	NXX	D		3	5	25	5.0			426
2-NITROPHENOL	NTP	D		25	35	2300	300.0 9.9E3	3.9E2		427
1-NITROPROPANE	NPM	D		10 (2-)	20 (2-)	2300	75.0			428
NITROPROPANE (1-, 2-, AND MIXTURES)	NPM	D		10 (2-)	20 (2-)	2300	300.0 1.7E4	6.8E2		429
2-NITROPROPANE	NPP	D		10	20	2300	300.0 1.7E4	6.8E2		430
NITROPROPANE (60%), NITROETHANE (40%)	NNM	D		10 (2-)	20 (2-)	2300	83.0			431
O-NITROTOLUENE	NIE	D	SKIN	2		200	3.0 1.3E3			432
NITROTOLUENE (O, P, AND MIXTURES)	NIT	D	SKIN	2		200	3.0			433
P-NITROTOLUENE	NIT	D		2	250	200	1.3E2			434
NONANE	NAN	D		200		5000	0.43 1.3E4	6.5E1		435
NONANOIC ACID	NAN	D					1.3E3			436
NONANOIC-TRIDECANOIC ACID MIXTURE	NAN	D								437
NONENE	NON	D								438
1-NONENE	NNE	D								439
NONYL ALCOHOL	NNP	D					3.9E2			440
NONYL PHENOL	NNP	D								441
NONYL PHENOL (ETHOXYLATED)	NNP	D								442
NONYL PHENOL SULFIDE (30% OR LESS)	NNP	D								443
OCTADECENE	OCT	D								444
OCTADECENEAMIDE (OLEAMIDE)	OCT	D								445
OCTANE	OAN	D		300	375	3700	150.0 1.4E4	1.1E2		446
OCTENE	OAN	D								447
OCTYL ACETATE	OCT	D								448
ISO-OCTYL ALCOHOL	OCT	D					5.3E2			449
N-OCTYL ALCOHOL	OCT	D					4.0E3			450
OCTYL EPOXYTALLATE	OET	D								451
OCTYL PHTHALATE	OET	D								452
OIL, CLARIFIED	OIL	D		5 MG/M3						453
OIL, CRUDE (SOUP)	OIL	D								454
OIL, DIESEL	OIL	D		10 (H2S)						455
OIL, EDIBLE: BEECHNUT	OIL	D								456
OIL, EDIBLE: CASTOR	OIL	D								457
OIL, EDIBLE: COCOA BUTTER	OIL	D								458
OIL, EDIBLE: COCONUT	OIL	D								459

TABLE A-3. MASTER LISTING OF HSIDS DATA (CONT'D)

20-DEC-85 CHEMICAL NAME	TDX CODE	CARC REF	NFPA SEC	CAS	EMRSP GUIDE	BIO MED	NIOSH GUIDE	BIO MON	QUAL DT	QUAN DT	TLV DT	SEQ NO.
MOTOR FUEL ANTIKNOCK CMPS (PB ALKYL)	2		---	78-00-2	56							409
NAPHTHA: AROMATIC (10% OR LESS BENZENE)	4N		---	8030-30-6	27				D			410
NAPHTHA: COAL TAR	4N		---	8030-30-6	27							411
NAPHTHA: CRACKING FRACTION	4N		---	8030-30-6	27							412
NAPHTHA: HEAVY	4N		---	8030-30-6	27							413
NAPHTHALENE	3#		2212	91-20-3	32	X						414
NAPHTHA: PARAFFINIC	4N		---	8030-30-6	27							415
NAPHTHA: PETROLEUM	4N		---	8030-30-6	27				D			416
NAPHTHA: SOLVENT	4N		---	8030-30-6	27							417
NAPHTHA: STODDARD SOLVENT	3		0---	8052-41-3	27	X			D		G	418
NAPHTHA: VM & P (75% NAPHTHA)	4H		---	8030-30-6	27							419
NAPHTHENIC ACID	5		-113	1338-24-5								420
NICKEL	6			7440-02-0				X	U		D	421
NITRIC ACID	2		2343	7697-37-2	44	X		X		DG	DG	422
NITRIC ACID (70% OR LESS)	2		---	7697-37-2	44	X		X		D		423
NITROBENZENE	2		3324	98-95-3	55	X		X	U			424
NITROGEN, LIQUIFIED	5		---	7727-37-9	21							425
NITROGEN OXIDES	6		---	10102-44-0				X				426
2-NITROPHENOL	5		---	88-75-5	55							427
1-NITROPROPANE	3		---	108-03-2	26	X		X				428
NITROPROPANE (1-, 2-, AND MIXTURES)	1	A2	---		26							429
2-NITROPROPANE	1	A2	1111	79-46-9	26	X						430
NITROPROPANE (60%), NITROETHANE (40%)	1	A2	---		26							431
O-NITROTOLUENE	3#		2---	99-08-1	55	X						432
NITROTOLUENE (D, P, AND MIXTURES)	3		---	99-08-1	55	X						433
P-NITROTOLUENE	3		3---	99-08-1	55	X		X				434
NONANE	3		0000	111-84-2	27	X						435
NONANOIC ACID	5		---	112-05-0								436
NONANOIC-TRIDECANOIC ACID MIXTURE	5		---									437
NONENE	5		-110	27215-95-8								438
1-NONENE	5		-110	27215-95-8								439
NONYL ALCOHOL	5		-000	143-08-8								440
NONYL PHENOL	5		1121	25154-52-3								441
NONYL PHENOL (ETHOXYLATED)	5		---									442
NONYL PHENOL SULFIDE (30% OR LESS)	5		---									443
OCTADECENE	5		---									444
OCTADECENEAMIDE (OLEAMIDE)	5		---									445
OCTANE	3		0---	111-65-9	27	X		X		DG	O	446
OCTENE	5		---	25377-83-7								447
OCTYL ACETATE	5		---	112-14-1								448
ISO-OCTYL ALCOHOL	5		---									449
N-OCTYL ALCOHOL	5		-001	111-87-5								450
OCTYL EPOXYTALLATE	5		---									451
OCTYL PHTHALATE	4N		---	117-84-0								452
OIL: CLARIFIED	5		---									453
OIL: CRUDE (SOUR)	3#		1011							D		454
OIL: DIESEL	5		0---							D		455
OIL: EDIBLE: BEECHNUT	5		---									456
OIL: EDIBLE: CASTOR	5		---									457
OIL: EDIBLE: COCOA BUTTER	5		---									458
OIL: EDIBLE: COCONUT	5		0---									459

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

CHEMICAL NAME	CHRIS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA	SEQ NO.
OIL, EDIBLE: COCONUT OIL, ESTERIFIED	D									460
OIL, EDIBLE: COCONUT OIL, FATTY ACID	D									461
OIL, EDIBLE: COCONUT OIL, METHYL ESTER	D									462
OIL, EDIBLE: COD LIVER	D									463
OIL, EDIBLE: CORN	D									464
OIL, EDIBLE: COTTONSEED	OCS									465
OIL, EDIBLE: COTTON SEED FATTY ACID	D									466
OIL, EDIBLE: FISH	OFS									467
OIL, EDIBLE: GRAPESEED	D									468
OIL, EDIBLE: GROUNDNUT	D									469
OIL, EDIBLE: HAZELNUT	D									470
OIL, EDIBLE: LARD	D									471
OIL, EDIBLE: MAIZE	D									472
OIL, EDIBLE: MUSTARD SEED	D									473
OIL, EDIBLE: NUTMEG BUTTER	D									474
OIL, EDIBLE: OLIVE	OOL							2.7E3		475
OIL, EDIBLE: PALM	OPM									476
OIL, EDIBLE: PEANUT	OPN							2.7E3		477
OIL, EDIBLE: POPPY	D									478
OIL, EDIBLE: RAISIN SEED	D									479
OIL, EDIBLE: RAPESEED	D									480
OIL, EDIBLE: RICE BRAN	D									481
OIL, EDIBLE: RICE	D									482
OIL, EDIBLE: SAFFLOWER	OSF									483
OIL, EDIBLE: SALAD	D									484
OIL, EDIBLE: SESAME	D									485
OIL, EDIBLE: SOYA BEAN	D							2.7E3		486
OIL, EDIBLE: SOYBEAN (EPOXIDIZED)	D									487
OIL, EDIBLE: SUNFLOWER SEED	D									488
OIL, EDIBLE: TUCUM	OTC									489
OIL, EDIBLE: VEGETABLE	OVC									490
OIL, EDIBLE: WALNUT	D									491
OIL, FUEL: NO 1 (KEROSENE)	OON			100 MG/M3			1.0			492
OIL, FUEL: NO 1-D	OOD			100 MG/M3			1.0			493
OIL, FUEL: NO 2	OTW									494
OIL, FUEL: NO 2-D	OTD									495
OIL, FUEL: NO 4	OFR									496
OIL, FUEL: NO 5	OFV									497
OIL, FUEL: NO 6	OSX									498
OIL, MISC: ABSORPTION	OAS									499
OIL, MISC: ALIPHATIC	D			5 MG/M3						500
OIL, MISC: ANIMAL	D									501
OIL, MISC: AROMATIC (5% OR LESS BENZENE)	D			5 MG/M3						502
OIL, MISC: AVIATION F2300	D			5 MG/M3						503
OIL, MISC: CASHEW NUT SHELL	OON									504
OIL, MISC: COAL	D			5 MG/M3						505
OIL, MISC: COAL TAR	OCT									506
OIL, MISC: CROTON	OCR									507
OIL, MISC: GAS, LOW POUR	D									508
OIL, MISC: GAS, LOW SULFUR	D									509
OIL, MISC: HEARTCUT DISTILLATE	D									510
OIL, MISC: LANDLIN	D			5 MG/M3						510

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

20-DEC-85 CHEMICAL NAME	TOX CODE	CARC REF	NFPA SEC NAS	PROQD	CAS	EMRSP GUIDE	BIO MED	NIOSH GUIDE	BIO MON	QUAL DT	QUAN DT	TLV DT	SEG DT NO
OIL, EDIBLE: COCONUT OIL, ESTERIFIED	5		---										460
OIL, EDIBLE: COCONUT OIL, FATTY ACID	5		---										461
OIL, EDIBLE: COCONUT OIL, METHYL ESTER	5		---										462
OIL, EDIBLE: COD LIVER	5		---										463
OIL, EDIBLE: CORN	5		---										464
OIL, EDIBLE: COTTONSEED	5		0---										465
OIL, EDIBLE: COTTON SEED FATTY ACID	5		---										466
OIL, EDIBLE: FISH	5		---										467
OIL, EDIBLE: GRAPESEED	5		---										468
OIL, EDIBLE: GROUNDNUT	5		---										469
OIL, EDIBLE: HAZELNUT	5		---										470
OIL, EDIBLE: LARD	5		0---										471
OIL, EDIBLE: MAIZE	5		---										472
OIL, EDIBLE: MUSTARD SEED	5		---										473
OIL, EDIBLE: NUTMEG BUTTER	5		---										474
OIL, EDIBLE: OLIVE	5		---										475
OIL, EDIBLE: PALM	5		0---										476
OIL, EDIBLE: PEANUT	5		0---										477
OIL, EDIBLE: POPPY	5		---										478
OIL, EDIBLE: RAISIN SEED	5		---										479
OIL, EDIBLE: RAPESEED	5		---										480
OIL, EDIBLE: RICE BRAN	5		---										481
OIL, EDIBLE: SAFFLOWER	5		---										482
OIL, EDIBLE: SALAD	5		---										483
OIL, EDIBLE: SESAME	5		---										484
OIL, EDIBLE: SOYA BEAN	5		0---										485
OIL, EDIBLE: SOYBEAN (EPOXIDIZED)	5		---										486
OIL, EDIBLE: SUNFLOWER SEED	5		---										487
OIL, EDIBLE: TUCUM	5		0---										488
OIL, EDIBLE: VEGETABLE	5		0---										489
OIL, EDIBLE: WALNUT	5		---										490
OIL, FUEL: NO 1 (KEROSENE)	4N		0111		8008-20-6	27							491
OIL, FUEL: NO 1-D	4H		0---										492
OIL, FUEL: NO 2	5		0---										493
OIL, FUEL: NO 2-D	5		0---										494
OIL, FUEL: NO 4	5		0---										495
OIL, FUEL: NO 5	5		0---										496
OIL, FUEL: NO 6	5		0---										497
OIL, MISC: ABSORPTION	5		---										498
OIL, MISC: ALIPHATIC	4H		---										499
OIL, MISC: ANIMAL	5		---										500
OIL, MISC: AROMATIC (5% OR LESS BENZENE)	4H		---										501
OIL, MISC: AVIATION F2300	4H		---										502
OIL, MISC: CASHEW NUT SHELL	5		---										503
OIL, MISC: COAL	4H		---										504
OIL, MISC: COAL TAR	5		-112										505
OIL, MISC: CROTON	5		---										506
OIL, MISC: GAS, LOW POUR	5		---										507
OIL, MISC: GAS, LOW SULFUR	5		---										508
OIL, MISC: HEARTCUT DISTILLATE	4H		---										509
OIL, MISC: LANOLIN	5		---										510

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

20-DEC-85 CHEMICAL NAME	CHRIS CODE	CFR CODE	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA PPM	SEQ NO.
OIL, MISC: LINSEED	OLB	D								511
OIL, MISC: LUBRICATING	OLB	D		5 MG/M3						512
OIL, MISC: MINERAL	OMN	D		5 MG/M3						513
OIL, MISC: MINERAL SEAL	OMS	D								514
OIL, MISC: MOTOR	OMT	D		5 MG/M3						515
OIL, MISC: MEATFOOT	ONF	D								516
OIL, MISC: OITICIA	OPT	D								517
OIL, MISC: PENETRATING	OPT	D								518
OIL, MISC: PERILLA		D								519
OIL, MISC: PILCHARD		D								520
OIL, MISC: PINE		D								521
OIL, MISC: RANGE		D								522
OIL, MISC: RESIDUAL	ORG	D								523
OIL, MISC: RESIN	ORS	D								524
OIL, MISC: RESINOUS PETROLEUM	ORS	D								525
OIL, MISC: ROAD	ORD	D								526
OIL, MISC: RDSIN	ORN	D								527
OIL, MISC: SEAL		D								528
OIL, MISC: SOAPSTOCK		D								529
OIL, MISC: SPERM	OSP	D					2.6E3			530
OIL, MISC: SPINDLE	OSD	D								531
OIL, MISC: SPRAY	OSY	D								532
OIL, MISC: TALL	OTL	D					2.0E3			533
OIL, MISC: TALL, FATTY ACID	OTL	D								534
OIL, MISC: TANNER'S	OTN	D								535
OIL, MISC: TRANSFORMER	OTF	D								536
OIL, MISC: TUNG		D								537
OIL, MISC: TURBINE	OTB	D								538
OIL, MISC: WHALE		D								539
OIL, MISC: WHITE (MINERAL)		D		5 MG/M3						540
OIL, MISC: WOOD		D								541
OLEIC ACID	OLA	D					1.3E3			542
OLEUM	OLM	D		1 MG/M3						543
OLEYL ALCOHOL (OCTADECANOL)		D								544
ORGANIC AMINE 70		D								545
OZONE		D		0.1		10	0.05			546
PAINT PIGMENTS (DRY)		D		1.0 MG/M3						547
PARALDEHYDE	PDH	D		1.5 MG/M3		15 MG/M3				548
PENTACHLOROETHANE	PCE	D					0.8	3.3E4		549
PENTADECANOL	PDC	D					4	5E3		550
1, 3-PENTADIENE	PDI	D								551
PENTAETHYLENE GLYCOL		D								552
N-PENTANE	PTA	D		600	750	5000	990.0	5.7E5	9.9E2	553
1-PENTENE	PTE	D						5.3E5		554
PERCHLOROETHYLENE (TETRACHLOROETHYLENE)	PER	D		50	200	500	4.7	2.1E4	4.2E2	555
PETROLATUM	PTL	D								556
PHENOL	PHN	D	SKIN	5	10	100	0.2	4.7E2	9.4E1	557
PHOSPHORIC ACID	PAC	D		1 MG/M3	3 MG/M3			3.9E1		558
PHOSPHORIZED BICYCLIC TERPENE		D								559
PHOSPHORUS, WHITE	PPW	D		0.1 MG/M3	0.3 MG/M3					560
PHTHALATE PLASTICIZERS		D								561

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

20-DEC-85 CHEMICAL NAME	TOX CODE	CARC REF	NFPA SEC	CAS	EMRSP GUIDE	BIO MED	NIOSH GUIDE	BIO MON	QUAL DT	QUAN DT	TLV DT	SEQ NO.
OIL, MISC: LINSEED	5	---	0---									511
OIL, MISC: LUBRICATING	4H	---	0---							D		512
OIL, MISC: MINERAL	4H	---	0---			X	X			D		513
OIL, MISC: MINERAL SEAL	5	---	---									514
OIL, MISC: MOTOR	4H	---	---							D		515
OIL, MISC: NEATFOOT	5	---	---									516
OIL, MISC: OITICIA	5	---	---									517
OIL, MISC: PENETRATING	5	---	---									518
OIL, MISC: PERILLA	5	---	---									519
OIL, MISC: PILCHARD	5	---	---									520
OIL, MISC: PINE	5	---	---									521
OIL, MISC: RANGE	5	---	0111							D		522
OIL, MISC: RESIDUAL	5	---	-222									523
OIL, MISC: RESIN	5	---	---									524
OIL, MISC: RESINOUS PETROLEUM	5	---	---									525
OIL, MISC: ROAD	5	---	0121									526
OIL, MISC: ROSIN	5	---	-222									527
OIL, MISC: SEAL	5	---	---									528
OIL, MISC: SOAPSTOCK	5	---	---									529
OIL, MISC: SPERM	5	---	-010									530
OIL, MISC: SPINDLE	5	---	---									531
OIL, MISC: SPRAY	5	---	0111									532
OIL, MISC: TALL	5	---	---									533
OIL, MISC: TALL, FATTY ACID	5	---	---									534
OIL, MISC: TANNER'S	5	---	---									535
OIL, MISC: TRANSFORMER	5	---	---									536
OIL, MISC: TUNG	5	---	0---							D		537
OIL, MISC: TURBINE	5	---	---									538
OIL, MISC: WHALE	5	---	---									539
OIL, MISC: WHITE (MINERAL)	4H	---	---									540
OIL, MISC: WOOD	5	---	---									541
OLEIC ACID	5	---	---	112-80-1								542
OLEUM	3	---	3443	8014-95-7	39					D		543
OLEYL ALCOHOL (OCTADECANOL)	5	---	---									544
ORGANIC AMINE 70	5	---	---	10028-15-6			X					545
OZONE	6	---	---									546
PAINT PIGMENTS (DRY)	6	---	---									547
PARALDEHYDE	4H	---	2---	123-63-7	26							548
PENTACHLOROETHANE	5	---	---	76-01-7	55							549
PENTADECANOL	5	---	---									550
1,3-PENTADIENE	5	---	---	2004-70-8								551
PENTAETHYLENE GLYCOL	5	---	---									552
N-PENTANE	3	---	1001	109-66-0	27	X	X			DG	DG	553
1-PENTENE	5	---	---									554
PERCHLOROETHYLENE (TETRACHLOROETHYLENE)	3#	---	-112	127-18-4	74	X				DG	DG	555
PETROLATUM	5	---	---	8012-95-1								556
PHENOL	2	---	3233	108-95-2	55	X		U		DG	DG	557
PHOSPHORIC ACID	3	---	2031	7664-38-2	60	X	X					558
PHOSPHORIZED BICYCLIC TERPENE	5	---	---									559
PHOSPHORUS, WHITE	2	---	---									560
PHTHALATE PLASTICIZERS	5	---	3-44	7723-14-0								561

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

CHEMICAL NAME	CHRS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA	SEQ NO
20-DEC-85										
PHTHALIC ANHYDRIDE	PAN	D		1	4	5	0.05	6.6E1	6.6E1	562
PINENE		D								563
POLYALKENYL SUCCINIC ANHYDRIDE AMINE		D								564
POLYAMINE, AMIDE MIXTURE		D								565
POLYBUTENE	PLB	D								566
POLYETHYLENE GLYCOL		D								567
POLYETHYLENE POLYANINES	PEB	D								568
POLYISOBUTYLENE		D								569
POLYMERIZED ESTER		D								570
POLYMETHYLENE POLYPHENYL ISOCYANATE	PPI	D		0.01		5	0.4			571
POLYPROPYLENE	PLP	D								572
POLYPROPYLENE GLYCOL	PGC	D								573
POLYPROPYLENE GLYCOL METHYL ETHER	PGM	D								574
POLYSTYRENE DIALKYL MALEATE		D								575
POLYVINYL BENZYLTRIMETHYL AMMONIUM CHLORIDE	PVB	D				20000				576
PROPANE	PRP	D						1.0E6		577
N-PROPANOLAMINE	PLA	D						2.8E3		578
PROPIONALDEHYDE	PAD	D		4000				3.4E5		579
PROPIONIC ACID	PNA	D		10	15		0.1	3.2E3	3.2E2	580
PROPIONIC ANHYDRIDE	PAH	D						1.3E3		581
PROPIONITRILE	PCN	D	SKIN	6				5.1E4		582
N-PROPYL ACETATE	PAT	D		200	250	8000	20.0	3.3E4	1.7E2	583
N-PROPYL ALCOHOL	PAL	D	SKIN	200	250	4000	40.0	1.9E4	2.6E2	584
N-PROPYLAMINE	PRA	D					1.0	3.2E5		585
PROPYL BENZENE		D						3.3E3		586
PROPYLENE	PPL	D		1000	1250	10000	85.0	1.0E6		587
PROPYLENE BUTYLENE POLYMER	PBP	D								588
PROPYLENE GLYCOL	PPG	D						2.6E2		589
PROPYLENE GLYCOL METHYL ETHER	PME	D		100						590
PROPYLENE OXIDE	POX	D		20		2000	65.0	5.9E5	2.9E4	591
PROPYLENE POLYMER		D								592
PROPYLENE TETRAMER	PTT	D								593
PROPYLENE TRIMER		D								594
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)		D								595
PYRIDINE	PRD	D		25	10	8000	0.05			596
RUM		D		5		3600	0.17	2.4E4	4.7E3	597
SAND		D								598
SILICA		D								599
SILICON TETRACHLORIDE	STC	D				100				600
SODIUM ACETATE, GLYCOL, WATER SOLUTIONS		D								601
SODIUM BOROHYDRIDE (13%)	SBI	D								602
SODIUM BOROHYDRIDE (<=15%), NaOH/SOLUT	SBX	D								603
SODIUM CHLORIDE (50% OR LESS)	SDD	D								604
SODIUM DICHROMATE SOLUTION (<=69%)(CRVI)	SDL	D								605
SODIUM DITHIONITE SOLUTION (<=45%)	SHR	D								606
SODIUM HYPOCHLORITE SOLUTION (<=15%)	SHP	D								607
SODIUM 2-MERCAPTOBENZOTHIADIZOL SOLUTION	SMB	D								608
SODIUM SULFONATE		D								609
STEARIC ACID	SRA	D								610
STEAR/L ALCOHOL (OCTADECANOL)		D								611
STYRENE	STY	D		50	100	5000	0.15	6.6E3	1.3E2	612

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

20-DEC-85 CHEMICAL NAME	TOX CODE	CARC REF	NFPA SEC PROD	CAS	EMRSP GUIDE	BIO MED	NIOSH GUIDE	BIO MON	QUAL DT	QUAN DT	TLV DT	SEQ NO.
PHTHALIC ANHYDRIDE	3		2231	85-44-9	60	X	X					562
PINENE	5		----	80-56-8	26							563
POLYALKENYL SUCCINIC ANHYDRIDE AMINE	5		----									564
POLYAMINE, AMIDE MIXTURE	5		----									565
POLYBUTENE	5		0----									566
POLYETHYLENE GLYCOL	5		----	25322-68-3								567
POLYETHYLENE POLYAMINES	5		----									568
POLYISOBUTYLENE	5		----									569
POLYMERIZED ESTER	5		----									570
POLYMETHYLENE POLYPHENYL ISOCYANATE	4C		-324									571
POLYPROPYLENE	5		----	25322-69-4								572
POLYPROPYLENE GLYCOL	5		----									573
POLYPROPYLENE GLYCOL METHYL ETHER	5		----									574
POLYSTYRENE DIALKYL MALEATE	5		----									575
POLYVINYL BENZYLTRIMETHYL AMMONIUM CHLORIDE	5		----									576
PROPANE	3		1000	74-98-6	22	X	X			DG		577
N-PROPANOLAMINE	5		----									578
PROPIONALDEHYDE	4L		2212	123-62-6	26				D			579
PROPIONIC ACID	3#		2232	79-09-4	29	X						580
PROPIONIC ANHYDRIDE	5		2321	123-62-6	29							581
PROPIONITRILE	4L		----	107-12-0	28					G		582
N-PROPYL ACETATE	3		-112	109-60-4	26	X	X			G		583
N-PROPYL ALCOHOL	3		-102	71-23-8	26	X	X			DG		584
N-PROPYLAMINE	4C		3----	107-10-8	68							585
PROPYL BENZENE	5		----	103-65-1	26							586
PROPYLENE	3		1001	115-07-1	22					DG		587
PROPYLENE BUTYLENE POLYMER	5		----									588
PROPYLENE GLYCOL	5		-000	57-55-6								589
PROPYLENE GLYCOL METHYL ETHER	4N		----	107-98-2		X	X					590
PROPYLENE OXIDE	2		2322	75-56-9	26	X				DG		591
PROPYLENE POLYMER	5		----									592
PROPYLENE TETRAHMER	5		0111		27							593
PROPYLENE TRIMER	5		-110									594
PSEUDOCUMENE (1,2,4-TRIMETHYLBENZENE)	4N		----	95-63-6								595
PYRIDINE	3		2221	110-86-1	26	X	X			DG		596
RUM	5		----							D		597
SAND	6		----	14808-60-7		X						598
SILICA	6		----	14808-60-7		X	X					599
SILICON TETRACHLORIDE	3*		-444	10026-04-7	39							600
SODIUM ACETATE, GLYCOL, WATER SOLUTIONS	5		----	127-09-3								601
SODIUM BOROHYDRIDE (13%)	5		----	16940-66-2	32							602
SODIUM BOROHYDRIDE (<=13%), NaOH/SOLUT	4L		----	16940-66-2	32							603
SODIUM CHLORATE (50% OR LESS)	5		----	7775-09-9	31							604
SODIUM DICROMATE SOLUTION (<=69%)(CRVI)	3		----	10588-01-9	35							605
SODIUM HYDROSULFIDE SOLUTION (<=45%)	3*		----	16721-80-5	59							606
SODIUM HYPOCHLORITE SOLUTION (<=15%)	5		----		60							607
SODIUM 2-MERCAPTOTHIAZOL SOLUTION	5		----	2492-26-4								608
SODIUM SULFONATE	5		----									609
STEARIC ACID	5		1----	57-11-4								610
STEARYL ALCOHOL (OCTADECANOL)	5		----	112-92-5								611
STYRENE	2		2222	100-42-5	27	X	X	UB				612



TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

CHEMICAL NAME	CHRIS CODE	CFR	OTHER ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA NO	SEQ NO
20-DEC-85										
SULFOLANE	SFL	D						6.6E3		613
SULFUR	SXX	O								614
SULFUR DIOXIDE	SFD	O								615
SULFURIC ACID	SFA	O		2	5	100	1.0	1.0E6	5.0E5	616
SULFURIC ACID, SPENT	SAC	O		1 MG/M3				1.3E0		617
TALLOW	TLO	D		1 MG/M3				2.6E3		618
TALLOW FATTY ALCOHOL	TFA	D								619
TALLOW NITRILE	TEC	D		1	5	150	2.6	1.7E4	1.7E4	620
1,1,2,2-TETRACHLOROETHANE	TTN	D	SKIN							621
TETRADECANOL	TTD	D								622
1-TETRADECENE	TDB	D								623
TETRADECYLBENZENE	TTG	D								624
TETRAETHYLENE GLYCOL	TTT	D						1.3E0		625
TETRAETHYLENEPENTAMINE	THF	O		200	250	20000	2.0	1.9E5	9.5E2	626
TETRAHYDROFURAN	THN	D								627
TETRAHYDRONAPHTHALENE		D								628
TETRAPROPYL BENZENE		D								629
TITANIUM		D								630
TOLUENE	TOL	D	SKIN	5.0 MG/M3	150	2000	2.14	2.9E4	2.9E2	631
TOLUENEDIAMINE	TDA	O		100						632
TOLUENE 2,4-DIISOCYANATE	TDI	O		.005	.02	10	0.21	1.3E1	2.6E2	633
TOLUENE DIISOCYANATE, DIPHENYLMET DIISOC	TDD	O		.005	.02	10	0.21	1.3E1		634
O-TOLUIDINE	TLI	O	SKIN	2		100	1.0	1.3E2	6.5E1	635
TRIARYLPHOSPHATE		D								636
1,2,4-TRICHLOROBENZENE	TCB	O		C5			3.0	1.3E3	2.6E2	637
1,1,2-TRICHLOROETHANE	TCH	O	SKIN	10	20	500		2.5E4		638
TRICHLOROETHYLENE	TCL	O		50	150	1000	21.4	7.6E4	1.5E3	639
1,2,3-TRICHLOROPROPANE	TCP	O		50	75	1000		2.6E3		640
TRICRESYL PHOSPHATE (<1% O-ISOMER)	TCP	D		0.1 MG/M3						641
TRICRESYL PHOSPHATE (>1% ORTHO)	TCO	O		0.1 MG/M3						642
TRIDECANE		D								643
TRIDECANOIC ACID		D								644
TRIDECANOL	TDN	D								645
1-TRIDECENE	TDC	D								646
TRIDECYL BENZENE		D								647
TRIETHANOLAMINE	TEA	O						1.3E1		648
TRIETHYLAMINE	TEN	O					0.48	7.0E4	7.0E3	649
TRIETHYLBENZENE	TEB	D		10	15	1000				650
TRIETHYLENE GLYCOL	TEG	D						1.3E0		651
TRIETHYLENE GLYCOL DIETHYL BUTYRATE		D								652
TRIETHYLENE GLYCOL MONOMETHYL ETHER		D								653
TRIETHYLENE GLYCOL TETRAMINE	TET	D								654
TRIETHYL PHOSPHATE		D								655
TRISODIETHYL TRIMELLITATE		D								656
TRISOPROPANOLAMINE	TIP	O								657
2,2,4-TRIMETHYL PENTANEDIOL-1,3-DIISOBUT		D								658
TRIMETHYLACETIC ACID	TAA	O		25	35	100	0.05			659
TRIMETHYL BENZENE		D								660
TRIMETHYL HEXAMETHYLENE DIAMINE(224, 244)	THA	O								661
TRIMETHYL HEXAMETHYLENE DIISOCYANATE	THI	O								662
2,2,4-TRIMETHYL-3-PENTANOL-1-ISOBUTYRATE		D								663

TABLE A-3. MASTER LISTING OF HSIDS DATA (CONT'D)

20-DEC-85 CHEMICAL NAME	TOX CODE	CARC REF	NFPA SEC PROD	CAS	EMRSP GUIDE	BIO MED	NIOH GUIDE	BIO MON	QUAL DT	QUAN DT	TLV DT	SEQ
SULFOLANE	5		-001	126-33-0						D		613
SULFUR	5		1111	7704-34-9	32							614
SULFUR DIOXIDE	2		3414	7446-09-5	16	X	X			DG	DG	615
SULFURIC ACID	3		3242	7664-93-9	39	X	X			D	D	616
SULFURIC ACID, SPENT	3		3---	7664-93-9	39	X	X					617
TALLOW	5		0---									618
TALLOW FATTY ALCOHOL	5		---									619
TALLOW NITRILE	5		---									620
1,1,2,2-TETRACHLOROETHANE	2		---	79-34-5	55	X	X			G		621
TETRADECANOL	5		---	112-72-1								622
1-TETRADECENE	5		---									623
TETRADECYLBENZENE	5		---									624
TETRAETHYLENE GLYCOL	5		1000	112-60-7								625
TETRAETHYLENEPENTAMINE	5		2122	112-57-2	60							626
TETRAHYDROFURAN	3		2112	109-99-9	26	X	X			DG	G	627
TETRAHYDRONAPHTHALENE	5		1112	119-64-2								628
TETRAPROPYL BENZENE	5		---									629
TITANIUM	6		---		37							630
TOLUENE	3#		2112	108-88-3	27	X	X	UB		DG	DG	631
TOLUENEDIAMINE	5		---	95-80-7								632
TOLUENE 2,4-DIISOCYANATE	2		3334	584-84-9	57	X				D		633
TOLUENE DIISOCYANATE, DIPHENYLMET DIISOC	2		---									634
O-TOLUIDINE	1	A2	3---	95-53-4	55	X				G		635
TRIARYLPHOSPHATE	5		---									636
1,2,4-TRICHLOROBENZENE	3#		---	120-82-1	54	X				D		637
1,1,2-TRICHLOROETHANE	3#		---	79-00-5	74	X	X			G		638
TRICHLOROETHYLENE	2		-112	79-01-6	74	X	X	UB		DG	G	639
1,2,3-TRICHLOROPROPANE	3		---	96-18-4			X					640
TRICRESYL PHOSPHATE (<1% O-ISOMER)	4N		---	78-30-8	55	X	X					641
TRICRESYL PHOSPHATE (>1% ORTHO)	4N		---	78-30-8	55	X	X					642
TRIDECANE	5		---	629-50-5								643
TRIDECANOIC ACID	5		-000	638-53-9								644
TRIDECANOL	5		---	112-70-9								645
1-TRIDECENE	5		---									646
TRIDECYL BENZENE	5		---	102-71-6	68							647
TRIETHANOLAMINE	5		1011							D	DG	648
TRIETHYLAMINE	3		-222	121-44-8		X				DG	DG	649
TRIETHYLBENZENE	5		-111	25340-18-5								650
TRIETHYLENE GLYCOL	5		-000	112-27-6								651
TRIETHYLENE GLYCOL DIETHYL BUTYRATE	5		---	95-08-9								652
TRIETHYLENE GLYCOL MONOMETHYL ETHER	5		---	112-35-6								653
TRIETHYLENETETRAMINE	5		-221	112-24-3	60							654
TRIETHYL PHOSPHATE	5		---	78-40-0								655
TRISODIYL TRIMELLITATE	5		---									656
TRIISOPROPANOLAMINE	5		---	122-20-3								657
2,2,4-TRIMETHYL PENTANEDIOL-1,3-DIISOBUT	5		---	6846-50-0								658
TRIMETHYLACETIC ACID	5		---	75-98-9								659
TRIMETHYL BENZENE	3		---	25551-13-7	26	X						660
TRIMETHYL HEXAMETHYLENE DIAMINE (224,244)	5		---		60							661
TRIMETHYL HEXAMETHYLENE DIISOCYANATE	5		---		55							662
2,2,4-TRIMETHYL-3-PENTANOL-1-ISOBUTYRATE	5		---									663

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

CHEMICAL NAME	CHRIS CODE	CFR ROUTE	TLV-TWA PPM	STEL PPM	IDLH PPM	ODOR PPM	CS PPM	CS/TWA NO.	SEG NO.
20-DEC-85									
TRIMETHYL PHOSPHITE	TTP	D	2	5					664
TRIPROPYLENE GLYCOL	TGC	D					1.3E1		665
TRIPROPYLENE GLYCOL MONOMETHYL ETHER		D							666
TRIXYLOXYL PHOSPHATE	TPT	D	100	150	1900		6.6E3	6.6E1	667
TURPENTINE		D	350						668
TURPENTINE SUBSTITUTE (WHITE SPIRIT)		D							669
UNDECANOL	UND	D							670
1-UNDECENE	UDC	D							671
N-UNDECYLBENZENE	UDB	D							672
UREA, AMMONIUM NITRATE SOLN (> 2% NH3)	UAS	D	25 (NH3)	35 (NH3)					673
N-VALERALDEHYDE	VAL	D	50			0.03	3.4E4	6.8E2	674
VANADIUM		D	0.05						675
VINYL ACETATE	VAM	D	10	20	5000	0.4	1.2E5	1.2E4	676
VINYL ACETATE, FUMARATE COPOLYMER		D							677
VINYL CHLORIDE	VCM	D	5		500	260.0	1.0E6	2.0E5	678
VINYL ETHYL ETHER	VEE	D					5.6E5		679
VINYLDIENECHLORIDE	VCI	D	5	20	5000	500.0	5.3E5	1.6E5	680
VINYL NEODECANATE	VND	D							681
VINYLTOLUENE	VNT	D	50	100	500	10.0	6.4E3	1.3E2	682
WAX: CANDELILLA		D							683
WAX: CARNAUBA	WCA	D							684
WAX: PARAFFIN	WPF	D	2	6	MG/M3				685
WAX: PETROLEUM		D							686
WELDING FUMES		D							687
WHITE SPIRIT		D	5.0			0.3			688
WHITE SPIRIT, LOW AROMATIC		D	500		10000	0.3			689
WINE		D	500		10000				690
WOOL GREASE		D							691
M-XYLENE	XLM	D	100	150	10000	3.7	1.3E4	1.3E2	692
O-XYLENE	XLO	D	100	150	10000	3.7	1.3E4	1.3E2	693
P-XYLENE	XLP	D	100	150	10000	3.7	1.3E4	1.3E2	694
XYLENE PARASOL		D							695
XYLENOL	XYL	D							696
ZINC		D	5.0						697
ZINC DIALKYLDITHIOPHOSPHATE	ZDP	D	10 (H2S)			0.7			698
									699

TOTAL OF 699 ITEM(S) IN TABLE

- \* CHLORODIFLUOROMETHANE -- SEE MONOCHLORODIFLUOROMETHANE
- \* ETHYL HEXOIC ACID -- SEE ETHYLHEXANOIC ACID
- \* ETHYLENE GLYCOL MONOMETHYL ETHER -- SEE 2-ETHOXYETHANOL
- \* GLYCOL DIACITATE -- SEE ETHYLENE GLYCOL DIACITATE
- \* METHYL AMYL KETONE -- SEE N-AMYL METHYL KETONE

TABLE A-3. MASTER LISTING OF HSDS DATA (CONT'D)

20-DEC-85 CHEMICAL NAME	TOX CODE	CARC REF	NFPA SEC NAS	PROD	CAS	EMRSP GUIDE	BIO MED	NIOSH GUIDE	BIO MON	QUAL DT	QUAN DT	TLV DT	SEQ NO.
TRIMETHYL PHOSPHITE	3		---		121-45-9	26	X						664
TRIPROPYLENE	5		---			27							665
TRIPROPYLENE GLYCOL	5		-000		24800-44-0								666
TRIPROPYLENE GLYCOL MONOMETHYL ETHER	5		---										667
TRIALLYLONYL PHOSPHATE	5		---										668
TURPENTINE	3		1111		8006-64-2	27	X	X					669
TURPENTINE SUBSTITUTE (WHITE SPIRIT)	4N		---		8030-30-6	27							670
UNDECANOL	5		---		112-42-5	27							671
1-UNDECENE	5		---										672
N-UNDECYLBENZENE	5		---										673
UREA, AMMONIUM NITRATE SOLN (> 2% NH3)	3*		---										674
N-VALERALDEHYDE	3		-112		110-62-3	26	X	X					675
VANADIUM	6				7440-62-2								676
VINYL ACETATE	2		2112		108-05-4	26	X				DG	G	677
VINYL ACETATE, FUMARATE COPOLYMER	5		---										678
VINYL CHLORIDE	1	A1	2212		75-01-4	17	X				DG	DG	679
VINYL ETHYL ETHER	5		2---		109-92-2	26							680
VINYLIDENECHLORIDE	2		2223		75-35-4	26	X				DG	G	681
VINYL NEODECANATE	5		---										682
VINYLTOLUENE	3		2211		25013-15-4	27	X	X			D		683
WAX: CANDELILLA	5		---										684
WAX: CARNAUBA	5		---										685
WAX: PARAFFIN	3		---		8002-74-2	27							686
WAX: PETROLEUM	5		---										687
WELDING FUMES	6		---										688
WHITE SPIRIT	4H		---		8030-30-6	27							689
WHITE SPIRIT, LOW AROMATIC	4H		---		8030-30-6	27					D		690
WINE	5		---										691
WOOL GREASE	5		---										692
M-XYLENE	3		2112		1330-20-7	27	X	X	U		G	G	693
O-XYLENE	3		2112		1330-20-7	27	X	X	U		G	G	694
P-XYLENE	3		2112		1330-20-7	27	X	X	U		G	G	695
XYLENE PARASOL	5		---										696
XYLENOL	5		2---		1300-71-6	55					D		697
ZINC	6		---		7440-66-6								698
ZINC DIALKYLDITHIOPHOSPHATE	3*		---	H2S									699

TOTAL OF 699 ITEM(S) IN TABLE

- \* CHLORODIFLUOROMETHANE -- SEE MONOCHLORODIFLUOROMETHANE
- \* ETHYL HEXOIC ACID -- SEE ETHYLHEXANOIC ACID
- \* ETHYLENE GLYCOL MONOETHYL ETHER -- SEE 2-ETHOXYETHANOL
- \* GLYCOL DIACETATE -- SEE ETHYLENE GLYCOL DIACETATE
- \* METHYL AMYL KETONE -- SEE N-AMYL METHYL KETONE

APPENDIX B  
Program Listings

Program

CGEDIT

PROGRAM CGEDIT

T. K. BOWLES 5/18/84

MODIFIED BY TKB 12/6/84 TO ADD NEW COLUMNS TO DATA BASE

THIS PROGRAM CONSTITUTES THE EDITOR FOR THE CHEMICAL SUBSTANCE  
DATA BASE.

CURRENT OPTIONS:

REMOVE RECORD  
CHANGE COLUMN ENTRY IN EXISTING RECORD  
ADD NEW RECORD(S)

DIMENSION NCH(26)

BYTE REC(40), CN(2), COL(10), NREC(40, 26), TREC(40), TMP(4)

DATA COL/'C', 'G', 'O', 'O', ' ', 'D', 'A', 'T', 'O', 'O/

DATA NCH/40, 6, 4, 10, 11, 11, 13, 7, 6, 7, 5, 5, 4, 5, 5, 5, 11, 6, 5, 4, 6,

\$ 4, 5, 5, 4/

5 TYPE\*, 'ENTER OPTION: '

TYPE\*, '0 = EDIT SESSION IS FINISHED'

TYPE\*, '1 = REMOVE RECORD FROM DATA BASE'

TYPE\*, '2 = CHANGE 1 OR MORE COLUMN ENTRIES IN EXISTING COLUMN'

TYPE\*, '3 = ADD NEW RECORD(S) TO DATA BASE'

ACCEPT\*, IOPT

NCOL=26

IF(IOPT EQ 0)GOTO 500

GOTO(100, 200, 300)IOPT

TYPE\*, 'WARNING\*\*\* ILLEGAL OPTION \*\*\* TRY AGAIN'

GOTO 5

100 TYPE\*, 'ENTER LINE NUMBER OF RECORD TO BE DELETED'

ACCEPT\*, LIN

LIN1=LIN+1

DO 50 I=1, NCOL

ENCODE(2, 1000, CN)I

IF(I LT 10)CN(1)='0'

COL(3)=CN(1)

COL(4)=CN(2)

OPEN(UNIT=1, NAME=COL, TYPE='OLD', ACCESS='DIRECT')

C----> DETERMINE NUMBER OF LINES CURRENTLY IN DATA BASE

C

READ(1'1)REC

DECODE(3, 1200, REC)NLIN

IF(LIN1 GT NLIN) THEN

TYPE\*, 'LINE NUMBER DOES NOT EXIST--TRY AGAIN'

GOTO 5

ENDIF

NLIN1=NLIN-1

DO 30 J=LIN1, NLIN1

JP1=J+1

READ(1'JP1)(REC(K), K=1, NCH(I))

IF (I EQ 13) THEN

JM1=J-1

ENCODE (3, 1200, REC)JM1

IF (JM1 LT 100)REC(1)='0'

IF (JM1 LT 10)REC(2)='0'

REC(4)=' '

ENDIF

WRITE(1'J)(REC(K), K=1, NCH(I))

30 CONTINUE

C----> CHANGE NUMBER OF RECORDS FOR LATER REFERENCE

C

ENCODE(3, 1200, REC)NLIN1

```

        WRITE(1,1)REC
        CLOSE(1)
50 CONTINUE
        GOTO 5
C----->CHANGE A COLUMN ENTRY
C
200 TYPE*, 'ENTER LINE NUMBER OF RECORD TO CHANGE'
    ACCEPT*, LIN
    LIN1=LIN+1
    DO 250 I=1, NCOL
        TYPE*, 'ENTER COLUMN NUMBER TO EDIT'
        TYPE*, '***ENTER 0 IF FINISHED***'
        ACCEPT*, ICOL
        IF(ICOL.EQ.0)GOTO 5
        ENCODE(2, 1000, CN)ICOL
        IF(ICOL.LT.10)CN(1)='0'
        COL(3)=CN(1)
        COL(4)=CN(2)
        OPEN(UNIT=1, NAME=COL, TYPE='OLD', ACCESS='DIRECT')
        TYPE*, 'OLD DATA FOR COLUMN', ICOL
        READ(1, LIN1)(REC(J), J=1, NCH(ICOL))
        WRITE(5, 1400)(REC(J), J=1, NCH(ICOL))
        TYPE*, 'ENTER CORRECTED DATA FOR COLUMN', ICOL
        READ(5, 1100)(REC(J), J=1, NCH(ICOL))
        WRITE(1, LIN1)(REC(J), J=1, NCH(ICOL))
        CLOSE(1)
250 CONTINUE
        GOTO 5
C----->ADD NEW RECORD
C
300 TYPE*, 'ADD NEW RECORD(S) AFTER LINE ____'
    ACCEPT*, KKK
C----->ADD ONE TO ACCOUNT FOR DISPLACEMENT OF LINE NUMBER DISPLAYED
C      IN TABLE AND ACTUAL PHYSICAL RECORD NUMBER OF THE CHEMICAL
C      (FIRST RECORD IN EACH FILE IS THE NUMBER OF ITEMS IN THAT FILE)
C
303 KKK=KKK+1
    KKK1=KKK+1
    KKK2=KKK+2
    TYPE*, 'ENTER A $ FOR CHEMICAL NAME WHEN DONE'
C----->DATA INPUT IS SETUP WITH 'CURSOR CONTROL' FOR ADM3
C      TERMINAL--SLICKER METHOD COULD BE USED IF WE JUST
C      WANT TO USE VT100 TERMINALS.
C
        WRITE(5, 305)
305 FORMAT(1X, 'CHEMICAL NAME=', $)
        READ(5, 306)(NREC(I, 1), I=1, NCH(1))
306 FORMAT(40A1)
        IF(NREC(1, 1).EQ.'$')GOTO 5
        WRITE(5, 310)
310 FORMAT(1H+, 54X, 'CHRIS CODE=', $)
        READ(5, 306)(NREC(I, 2), I=1, NCH(2))
        WRITE(5, 315)
315 FORMAT(//1X, 'CFR=', $)
        READ(5, 306)(NREC(I, 3), I=1, NCH(3))
        WRITE(5, 320)
320 FORMAT(1H+, 15X, 'OTHER ROUTE=', $)
        READ(5, 306)(NREC(I, 4), I=1, NCH(4))
        WRITE(5, 325)
325 FORMAT(1H+, 33X, 'TLV-TWA=', $)
        READ(5, 306)(NREC(I, 5), I=1, NCH(5))
        WRITE(5, 330)
330 FORMAT(1H+, 54X, 'STEL=', $)

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      READ(5,306)(NREC(I,6),I=1,NCH(6))
      WRITE(5,335)
335  FORMAT(/1X,'IDLH=',%)
      READ(5,306)(NREC(I,7),I=1,NCH(7))
      WRITE(5,340)
340  FORMAT(1H+,15X,'ODOR=',%)
      READ(5,306)(NREC(I,8),I=1,NCH(8))
      WRITE(5,345)
345  FORMAT(1H+,33X,'CS=',%)
      READ(5,306)(NREC(I,9),I=1,NCH(9))
      WRITE(5,350)
350  FORMAT(1H+,54X,'CS/TWA=',%)
      READ(5,306)(NREC(I,10),I=1,NCH(10))
      WRITE(5,355)
355  FORMAT(/1X,'TOX CODE=',%)
      READ(5,306)(NREC(I,11),I=1,NCH(11))
      WRITE(5,360)
360  FORMAT(1H+,15X,'CARC REF=',%)
      READ(5,306)(NREC(I,12),I=1,NCH(12))
      WRITE(5,365)
365  FORMAT(1H+,33X,'NFPA NAS=',%)
      READ(5,306)(NREC(I,14),I=1,NCH(14))
      WRITE(5,370)
370  FORMAT(1H+,54X,'AIR DATA?=',%)
      READ(5,306)(NREC(I,15),I=1,NCH(15))
      WRITE(5,375)
375  FORMAT(/1X,'QUAN CODE=',%)
      READ(5,306)(NREC(I,16),I=1,NCH(16))
      WRITE(5,376)
376  FORMAT(1H+,15X,'SEC PRDD=',%)
      READ(5,306)(NREC(I,17),I=1,NCH(17))
      WRITE(5,377)
377  FORMAT(1H+,33X,'CAS=',%)
      READ(5,306)(NREC(I,18),I=1,NCH(18))
      WRITE(5,378)
378  FORMAT(1H+,54X,'EMRSP GUIDE=',%)
      READ(5,306)(NREC(I,19),I=1,NCH(19))
      WRITE(5,379)
379  FORMAT(/1X,'MSDS=',%)
      READ(5,306)(NREC(I,20),I=1,NCH(20))
      WRITE(5,380)
380  FORMAT(1H+,15X,'BIO MED=',%)
      READ(5,306)(NREC(I,21),I=1,NCH(21))
      WRITE(5,381)
381  FORMAT(1H+,33X,'NIOSH GUIDE=',%)
      READ(5,306)(NREC(I,22),I=1,NCH(22))
      WRITE(5,382)
382  FORMAT(1H+,54X,'BIO MON=',%)
      READ(5,306)(NREC(I,23),I=1,NCH(23))
      WRITE(5,383)
383  FORMAT(/1X,'QUAL DT=',%)
      READ(5,306)(NREC(I,22),I=1,NCH(22))
      WRITE(5,384)
384  FORMAT(1H+,15X,'QUAN DT=',%)
      READ(5,306)(NREC(I,25),I=1,NCH(25))
      WRITE(5,385)
385  FORMAT(1H+,33X,'TLV DT=',%)
      READ(5,306)(NREC(I,26),I=1,NCH(26))
      ENCODE(3,1200,TMP)KKK
      IF(KKK.LT.100) TMP(1)='0'
      IF(KKK.LT.10) TMP(2)='0'
      TMP(4)=' '
      DO 388 I=1,NCH(13)

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      NREC(I,13)=TMP(I)
388 CONTINUE
C---->CHANGE SEQUENCE OF DATA BASE RECORDS TO ACCOUNT FOR ADDITION(S)
C
      DO 400 JJ=1,NCOL
      ENCODE(2,1000,CN)JJ
      IF(JJ.LT.10) CN(1)='0'
      COL(3)=CN(1)
      COL(4)=CN(2)
      OPEN(UNIT=1,NAME=COL,TYPE='OLD',ACCESS='DIRECT')
      READ(1'1)REC
      DECODE(3,1200,REC)NLIN
      NLIN=NLIN+1
      ENCODE(3,1200,REC)NLIN
      WRITE(1'1)REC
      DO 390 JJJ=NLIN,KKK2,-1
      JJJM1=JJJ-1
      READ(1'JJJM1)(TREC(I),I=1,NCH(JJ))
C---->IF FILE IS THE ONE WITH SEQUENCE NUMBERS FOR LISTINGS, ACTUALLY
C      CHANGE THOSE NUMBERS TO ACCOUNT FOR ADDITION(S).  DON'T JUST MOVE
C      RECORDS.
C
      IF (JJ.EQ.13) THEN
      ENCODE (3,1200,TREC)JJJM1
      IF (JJJM1.LT.100)TREC(1)='0'
      IF (JJJM1.LT.10)TREC(2)='0'
      TREC(4)=' '
      ENDIF
      WRITE(1'JJJ)(TREC(I),I=1,NCH(JJ))
390 CONTINUE
      WRITE(1'KKK1)(NREC(I,JJ),I=1,NCH(JJ))
      CLOSE(1)
400 CONTINUE
      GOTO 303
500 CALL EXIT
1000 FORMAT(I2)
1100 FORMAT(60A1)
1200 FORMAT(I3)
1300 FORMAT(I4)
1400 FORMAT(1X,60A1)
      END

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Program

CGTAB

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PROGRAM CGTAB
C
C   T. K. BOWLES      5/16/84
C
C   MODIFIED BY TKB  12/6/84  TO INCLUDE NEW COLUMNS IN DATA BASE
C
C   THIS PROGRAM CREATES THE TABULAR LISTING OF THE CHEMICAL SUBSTANCE
C   DATA BASE.  LISTINGS CAN BE MADE BY SORTING TECHNIQUES ON COLUMNS
C
C   KEY VARIABLES:
C
C   REC----BYTE DUMMY ARRAY FOR READING IN DATA FROM DATA BASE FILES
C   CSAV---BYTE ARRAY FOR TEMPORARY STORAGE OF ONE LINE OF DATA FOR
C           PRINTING IN TABLE
C   IADRS---ARRAY FOR STORING ADDRESSES OF ITEMS FOR THE TABLE LISTING
C           --DETERMINED BY SORT ON PARTICULAR COLUMN OF DATA BASE
C   NCH----ARRAY CONTAINING MAX NUMBER OF CHARACTERS FOR EACH
C           DATA BASE COLUMN
C   NHH----ARRAY CONTAINING NUMBER OF CHARACTERS FOR RIGHT JUSTIFICATION
C           FOR EACH DATA BASE COLUMN
C   COL----BYTE ARRAY FOR FILE NAME TO BE OPENED
C   CN-----BYTE ARRAY FOR COLUMN NUMBER (TO IDENTIFY PROPER FILE)
C   LOP-----IDENTIFIES LOGICAL OPERATOR FOR SORT:
C               EQ,LT,GT,LE,GE,NE
C   CHK----BYTE ARRAY CHECK VALUE FOR COLUMN SORT
C   NIK-----NUMBER OF RECORDS FOR EACH COLUMN AFTER SORT
C   NCP-----NUMBER OF COLUMNS TO PRINT IN TABLE
C   ICP-----ARRAY OF COLUMN NUMBERS TO PRINT IN TABLE
C
C   DIMENSION IADRS(800),NCH(26),NHH(26),ICP(26)
C   BYTE COL(10),CN(2),REC(40),CSAV(40,26),NUM(3),GARB,CHK(10)
C   DATA COL/'C','G','O','O',' ','D','A','T','O','O'/
C   DATA NCH/40,6,4,10,11,11,13,7,6,7,5,5,4,5,5,5,5,11,6,5,4,6,
C   $      4,5,5,4/
C   DATA NHH/40,5,3,5,5,5,7,7,6,7,4,4,4,5,3,3,5,11,4,3,3,4,
C   $      4,4,4,4/
C   NCOL=26
C   TYPE*, 'ENTER NUMBER OF LINES PER PAGE IN TABLE(<=55)'
C   ACCEPT*,LTAB
C   NSORT=0
C   LSORT=0
C   TYPE*, 'IF YOU WANT TO SINGULARLY SELECT CERTAIN ITEMS'
C   TYPE*, 'INSTEAD OF DOING SORT OF ENTIRE DATA BASE,'
C   TYPE*, 'ENTER 1'
C   TYPE*, 'OTHERWISE, ENTER 0'
C   ACCEPT*,ISEL
C---->CREATE SCRATCH FILE FOR STORING SELECTED RECORDS
C
C   1 OPEN(UNIT=2,NAME='CSRTCH.DAT',TYPE='SCRATCH',ACCESS='DIRECT')
C   IF(ISEL.EQ.1)GOTO 103
C---->DETERMINE BY WHICH COLUMN TO SORT
C
C   TYPE*, 'ENTER COLUMN NUMBER BY WHICH TO SORT'
C   ACCEPT*,ICND
C   ENCODE(2,1100,CN)ICND
C   IF(ICND.LT.10)CN(1)='0'
C   COL(3)=CN(1)
C   COL(4)=CN(2)
C   OPEN(UNIT=1,NAME=COL,TYPE='OLD',ACCESS='DIRECT')
C---->SELECT LOGICAL OPERATOR FOR SORT: EQ,LT,GT,LE,GE,NE
C
C   TYPE*, 'SELECT LOGICAL OPERATOR FOR SORT:'
C   TYPE*, 'ENTER 1 FOR EQ.'

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TYPE*, 'ENTER 2 FOR .LT. '
TYPE*, 'ENTER 3 FOR .GT. '
TYPE*, 'ENTER 4 FOR .LE. '
TYPE*, 'ENTER 5 FOR .GE. '
TYPE*, 'ENTER 6 FOR .NE. '
ACCEPT*, LOP
TYPE*, 'IS DECODING NECESSARY FOR SORT?'
TYPE*, 'ENTER 1 IF YES, 0 IF NO'
ACCEPT*, IDCOD
TYPE*, 'ENTER CHECK VALUE'
READ(5, 1800) JN, (CHK(I), I=1, JN)
C-----> DETERMINE NUMBER OF RECORDS IN DATA BASE
C
  READ(1'1) REC
  DECODE(3, 1400, REC) NLIN
  IK=1
  DO 100 IC=2, NLIN
  READ(1'IC) (REC(J), J=1, NCH(ICND))
C-----> DETERMINE NUMBER OF ACTUAL CHARACTERS IN REC
C   FOR USE IN DECODING, IF NECESSARY
C
  JNR=0
  DO 2 J=1, NHH(ICND)
  IF (REC(J).EQ. ' ') GOTO 3
  2 JNR=JNR+1
  3 GARB=0
C-----> CERTAIN COLUMNS NEED TO HAVE RECORD DECODED TO SORT
C   OTHERS CAN BE CHECKED DIRECTLY AGAINST ASCII CODE
C
  IF (IDCOD.NE. 1) THEN
    IF (LOP.NE. 1.AND. LOP.NE. 6) THEN
      TYPE*, 'INVALID LOGICAL OPERATOR FOR ALPHA DATA--'
      TYPE*, 'MUST USE .EQ. OR .NE. '
      CALL EXIT
    ELSEIF (LOP.EQ. 1) THEN
      DO 5 J=1, JN
      5 IF (REC(J).NE. CHK(J)) GOTO 100
    ELSE
      JNCNT=0
      DO 7 J=1, JN
      7 IF (REC(J).EQ. CHK(J)) JNCNT=JNCNT+1
      IF (JNCNT.EQ. JN) GOTO 100
    ENDIF
    IADRS(IK)=IC
    IK=IK+1
    GOTO 100
  ELSE
    IF (ICND.EQ. 11) JNR=1
    IDEC=0
    IF (ICND.EQ. 5.AND. REC(1).EQ. 'C') THEN
      DO 8 J=1, (JNR-1)
      8 REC(J)=REC(J+1)
      JNR=JNR-1
    ENDIF
    IF ((ICND.EQ. 5.OR. ICND.EQ. 6.OR. ICND.EQ. 7).AND. JNR.NE. 0) THEN
      DO 9 J=1, JNR
      IF (REC(J).EQ. ' ') IDEC=1
      9 GARB=0
      IF (IDEC.EQ. 0) THEN
        JNR=JNR+1
        REC(JNR)=' '
      ENDIF
    ELSEIF ((ICND.EQ. 5.OR. ICND.EQ. 6.OR. ICND.EQ. 7).AND. JNR.EQ. 0) THEN

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        GOTO 100
    ENDIF
    DEFODD=MOD(100, 2) * ECHK
    DEFODD=JNR(100, REC) * EREC
    ENDIF
C- - - BRANCH TO APPROPRIATE LOGICAL OPERATOR FOR SORT
C
        GOTO(10, 20, 30, 40, 50, 60) LOP
    TYPE* 'INVALID LOGICAL OPERATOR--PROGRAM TERMINATED'
    CALL EXIT
10 IF(EREQ GE ECHK) GOTO 80
    GOTO 100
20 IF(EREQ LT ECHK AND JNR NE 0) GOTO 80
    GOTO 100
30 IF(EREQ LE ECHK) GOTO 80
    GOTO 100
40 IF(EREQ LE ECHK AND JNR NE 0) GOTO 80
    GOTO 100
50 IF(EREQ GE ECHK) GOTO 80
    GOTO 100
60 IF(EREQ NE ECHK) GOTO 80
    GOTO 100
70 IADRS=K+10
    IK=IK+1
80 GARB=0
    NIK=IK-1
    CLOSE(1)
    GOTO 105
103 IK=1
    DO 104 I=1,800
    TYPE* 'ENTER FILE NUMBER TO SELECT'
    TYPE* 'IF FINISHED, ENTER 9999'
    ACCEPT* NSLID
    IF(NSLID EQ 9999) GOTO 105
    IADRS(IK)=NSLID(IK)
104 IK=IK+1
105 NIK=IK-1
C- - - NOW SAVE APPROPRIATE RECORDS (ADDRESSES SAVED IN IADRS) FROM
C      EACH COLUMN TO BE PRINTED
C
108 TYPE* 'ENTER NO. OF COLUMNS TO BE PRINTED'
    ACCEPT* NCP
    TYPE* 'ENTER COLUMNS TO PRINT'
    ACCEPT* ICP(1:10)
    ICSUM=0
    DO 110 I=1,NCP
110 ICSUM=ICSUM+IADRS(ICP(I))
    IF(ICSUM GT 132) THEN
        TYPE* 'TOTAL FIELD WIDTH OF REQUESTED COLUMNS EXCEEDS 132--'
        TYPE* 'TRY AGAIN'
        GOTO 108
    ENDIF
    KK=1
    DO 200 I=1,NCP
    ENCODE(2,1100,100) ICP(I)
    IF(ICP(I) LT 10) CN(1)=10
    IF(NSORT EQ 0) GL(2)=10
    COL(3)=CN(1)
    COL(4)=CN(2)
    OPEN(UN, I=1, NAME=COL, TYPE=OLD, ACCESS='DIRECT')
    IF(LSORT EQ 0) THEN
C- - - OPEN FILE FOR PARTIAL DATA BASE IN CASE YOU WANT
C      MULTIPLE SORTS

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C      COL(2)='P'
      OPEN(UNIT=4, NAME=COL, TYPE='NEW', ACCESS='DIRECT')
      NIK1=NIK+1
      ENCODE(3,1400,REC) NIK1
      WRITE(4'1) REC
      ENDIF
      DO 150 IREC=1, NIK
      KI=IADRS(IREC)
      READ(1'KI)(REC(J), J=1, NCH(ICP(I)))
      IF(LSORT.EQ.0) THEN
C----->WRITE RECORD TO PARTIAL DATA BASE FILE IN CASE YOU
C      WANT MULTIPLE SORTS
C
      WRITE(4'IREC+1)(REC(J), J=1, NCH(ICP(I)))
      ENDIF
C----->RIGHT JUSTIFY RECORD IN COLUMN
C      (UNLESS IT IS THE CHEMICAL NAME COLUMN)
C      SPECIAL TREATMENT FOR PRESENT COLUMN 11 (TOX CODE)
C
      IF(ICP(I).EQ.1) GOTO 145
      IF(ICP(I).EQ.11) THEN
      REC(4)=REC(2)
      REC(3)=REC(1)
      REC(5)=' '
      REC(1)=' '
      REC(2)=' '
      GOTO 145
      ENDIF
      ICNT=0
C----->CHECK FOR FIRST BLANK SPACE
C
      DO 120 J=1, NHH(ICP(I))
      IF(REC(J).EQ.' ') GOTO 121
      ICNT=ICNT+1
      120 CONTINUE
C----->CHECK TO SEE IF RIGHT-JUSTIFICATION IS TO OCCUR OVER ENTIRE
C      FIELD SPECIFICATION OR JUST PART OF IT
C
      121 IF(NCH(ICP(I)).NE.NHH(ICP(I))) THEN
C----->RIGHT JUSTIFY SECOND PORTION OF RECORD FIRST
C
      ICNT2=ICNT+2
      NCNT=ICNT+1
      DO 122 NN=ICNT2, NCH(ICP(I))
      IF(REC(NN).EQ.' ') GOTO 123
      NCNT=NCNT+1
      122 CONTINUE
      123 NDIF=NCH(ICP(I))-NCNT
C----->THIS PORTION OF RECORD COMPLETELY FILLS ALLOTMENT IF THE
C      FOLLOWING IS TRUE:
C
      IF(NDIF.EQ.0. OR. NCNT.EQ. (ICNT+1)) GOTO 128
C----->OTHERWISE, RIGHT JUSTIFY
C
      DO 124 K=NCH(ICP(I)), (NDIF+ICNT2), -1
      REC(K)=REC(NCNT)
      NCNT=NCNT-1
      124 CONTINUE
C----->FILL LEADING SPACES IN FIELD
C
      DO 125 K=1, NDIF
      REC(K+ICNT+1)=' '

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125  CONTINUE
    ENDIF
C---->RIGHT JUSTIFY ENTIRE RECORD
C
128  IDIF=NHH(ICP(I))-ICNT
    IF(IDIF.EQ.0.OR.ICNT.EQ.0) GOTO 145
    DO 130 K=NHH(ICP(I)),(IDIF+1),-1
    REC(K)=REC(ICNT)
    ICNT=ICNT-1
130  CONTINUE
C---->FILL LEADING SPACES IN FIELD
C
    DO 140 K=1,IDIF
    REC(K)=' '
140  CONTINUE
C---->SAVE RIGHT JUSTIFIED RECORD IN SCRATCH FILE
C
145  WRITE(2'KK')(REC(J),J=1,NCH(ICP(I)))
    KK=KK+1
150  CONTINUE
    CLOSE(1)
    CLOSE(4)
200  CONTINUE
C---->SET UP TABLE
C
    OPEN(UNIT=3,NAME='CTAB.DAT',TYPE='NEW')
C---->PRINT INITIAL HEADINGS
C
    CALL HDWRIT(NCP,ICP,NCH)
    KLIN=1
    DO 300 I=1,NIK
C---->CHECK TO SEE IF NEW PAGE
C
        IF(KLIN.GT.LTAB)THEN
            CALL HDWRIT(NCP,ICP,NCH)
            KLIN=1
        ENDIF
        DO 250 J=1,NCP
            IJ=(J-1)*NIK+I
            READ(2'IJ')(CSAV(K,J),K=1,NCH(ICP(J)))
250  CONTINUE
C---->PRINT ONE LINE IN TABLE
C
        WRITE(3,1200)((CSAV(K,J),K=1,NCH(ICP(J))),J=1,NCP)
        KLIN=KLIN+1
300  CONTINUE
C---->WRITE NUMBER OF TABLE ENTRIES FOR THIS SORT
C
        WRITE(3,1500)NIK
C---->TABLE FOOTNOTES
C
        TYPE*, 'DO YOU WANT TO PRINT FOOTNOTES FOR TABLE?'
        TYPE*, 'ENTER Y OR N'
        READ(5,1000)GARB
        IF(GARB.EQ.'Y') THEN
            WRITE(3,1300)
        ENDIF
C---->BLANK WRITE TO PROHIBIT 'SQUEEZING' OF LAST LINE
C
        WRITE(3,1000)
C---->CHECK TO SEE IF MORE SORTS ARE REQUIRED
C
        TYPE*, 'MORE SORTS?'

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END

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